AMERICAN JOURNAL OF ORTHODONTICS

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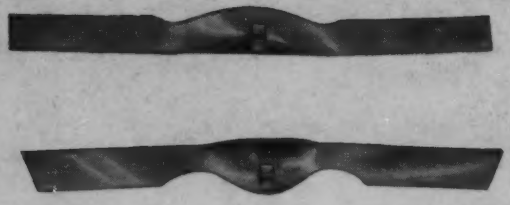
developed especially for the "EDGEWISE TECHNIC"



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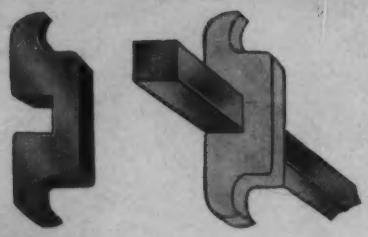

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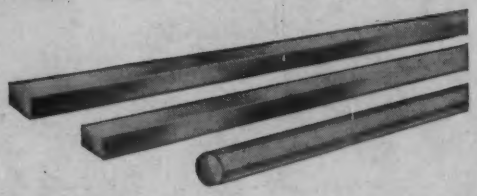

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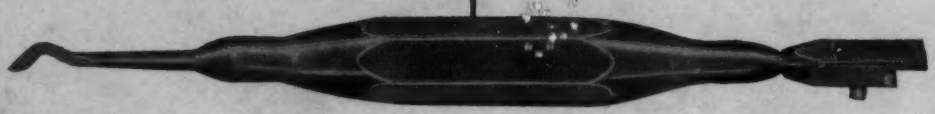

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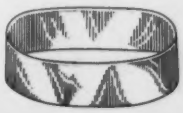

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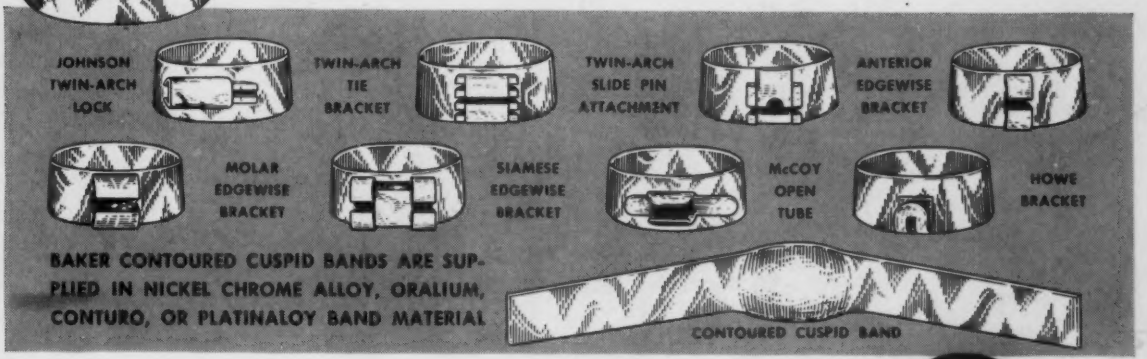
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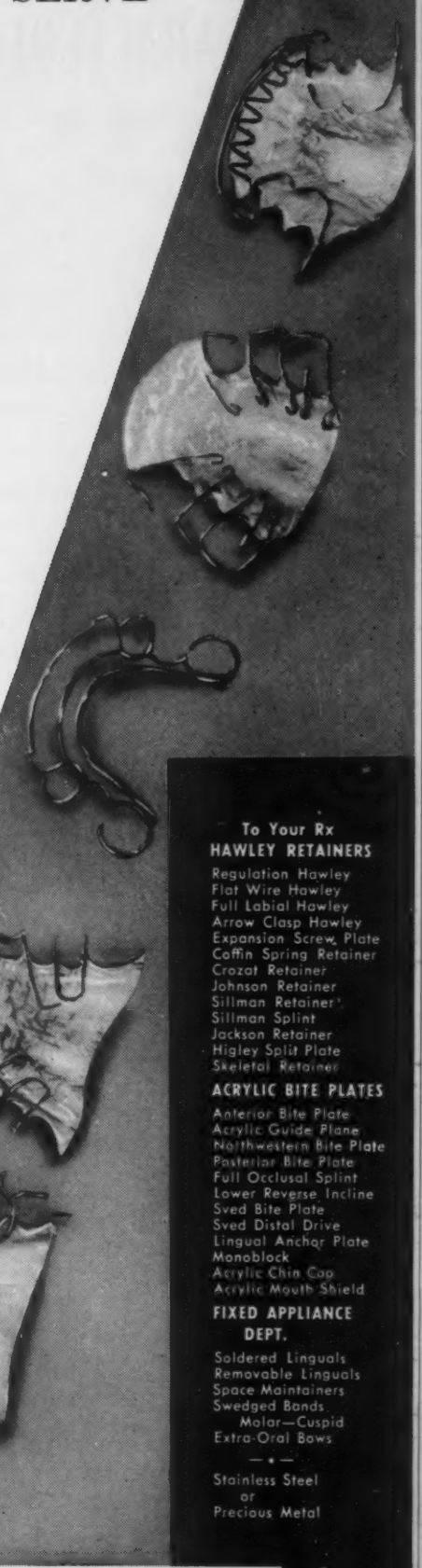

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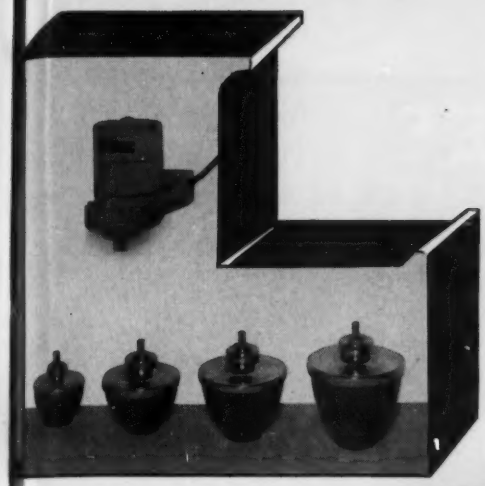

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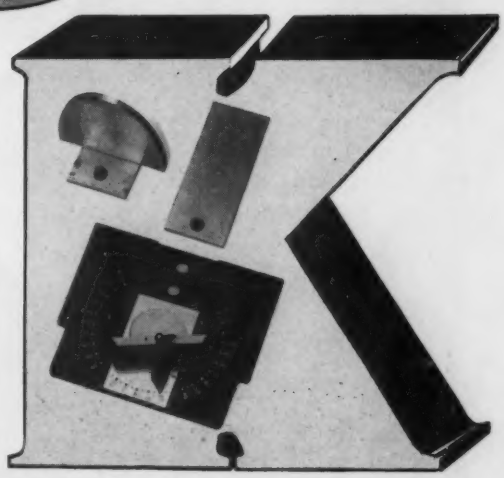

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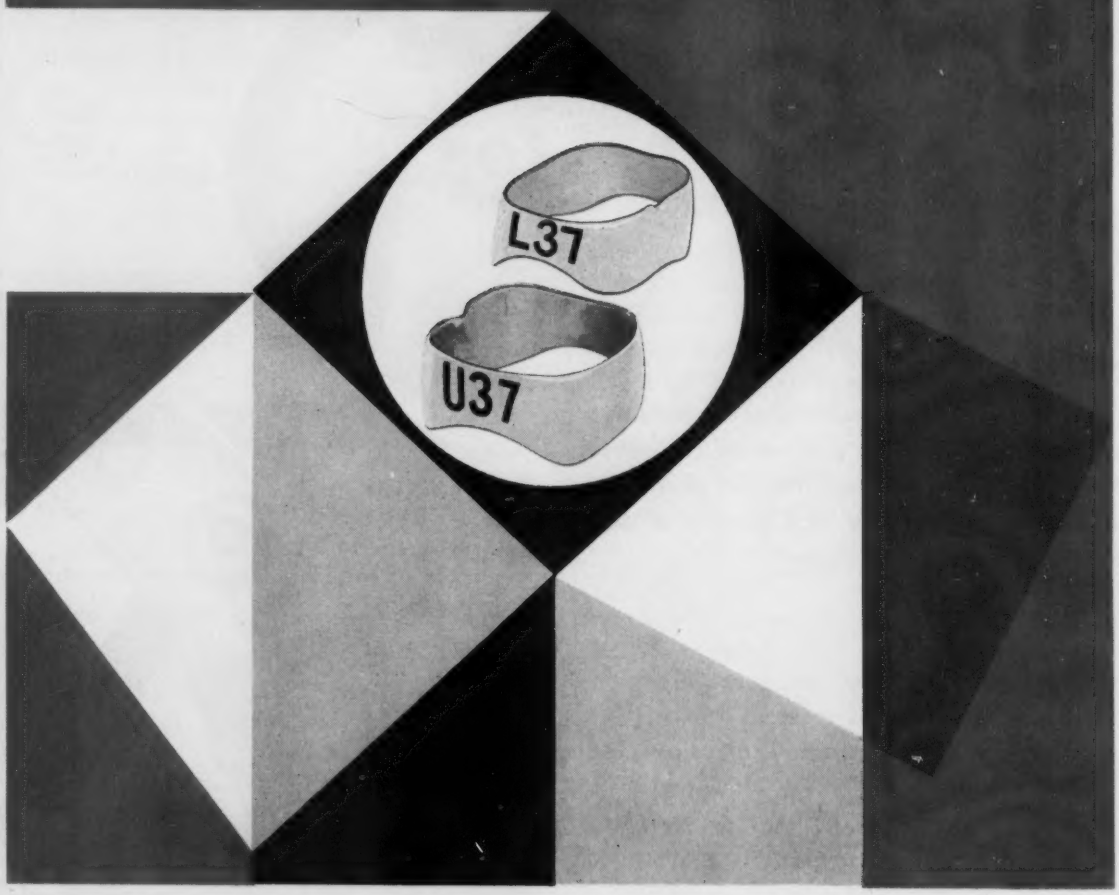

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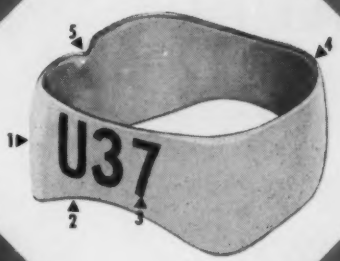

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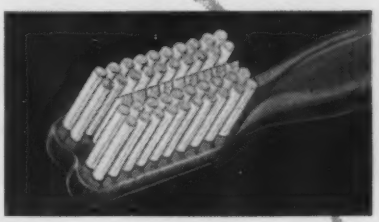

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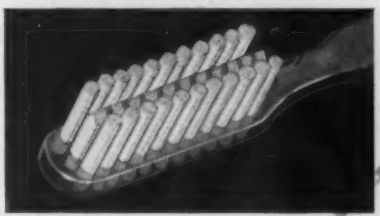

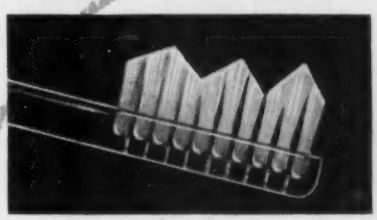

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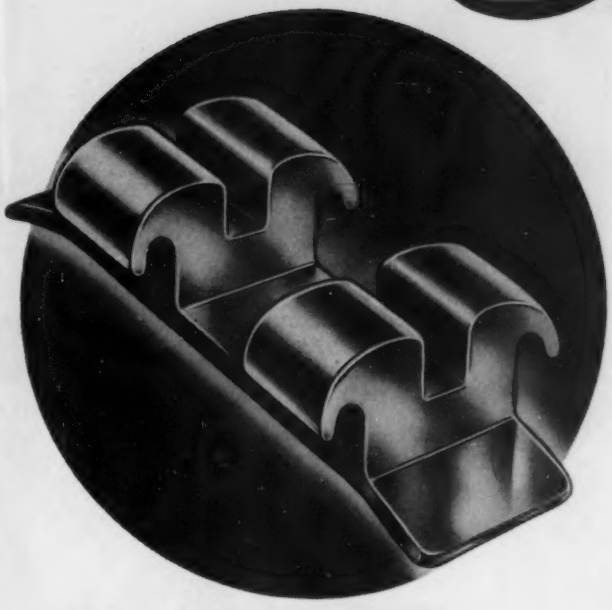

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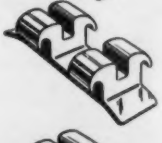

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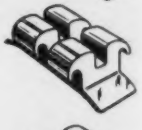

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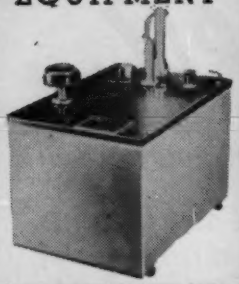

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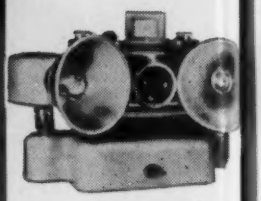

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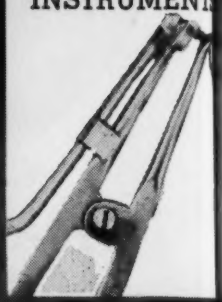

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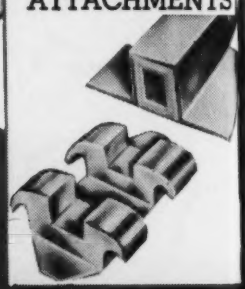

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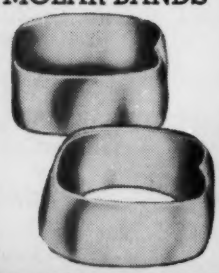

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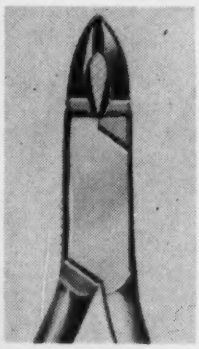

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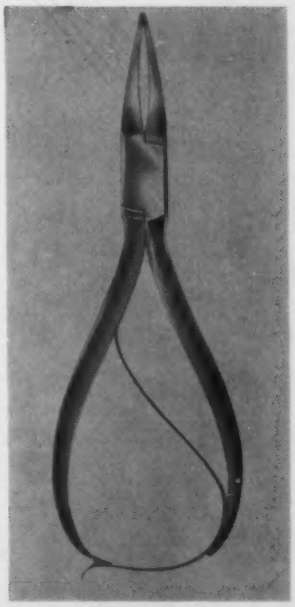

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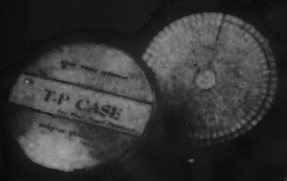

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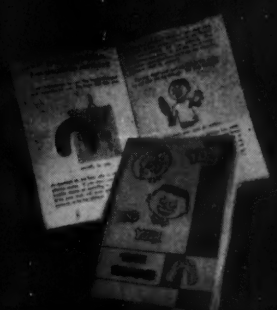

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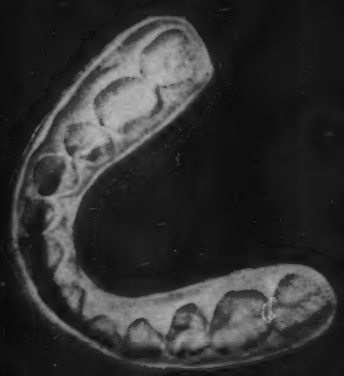

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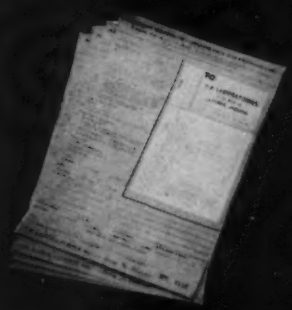

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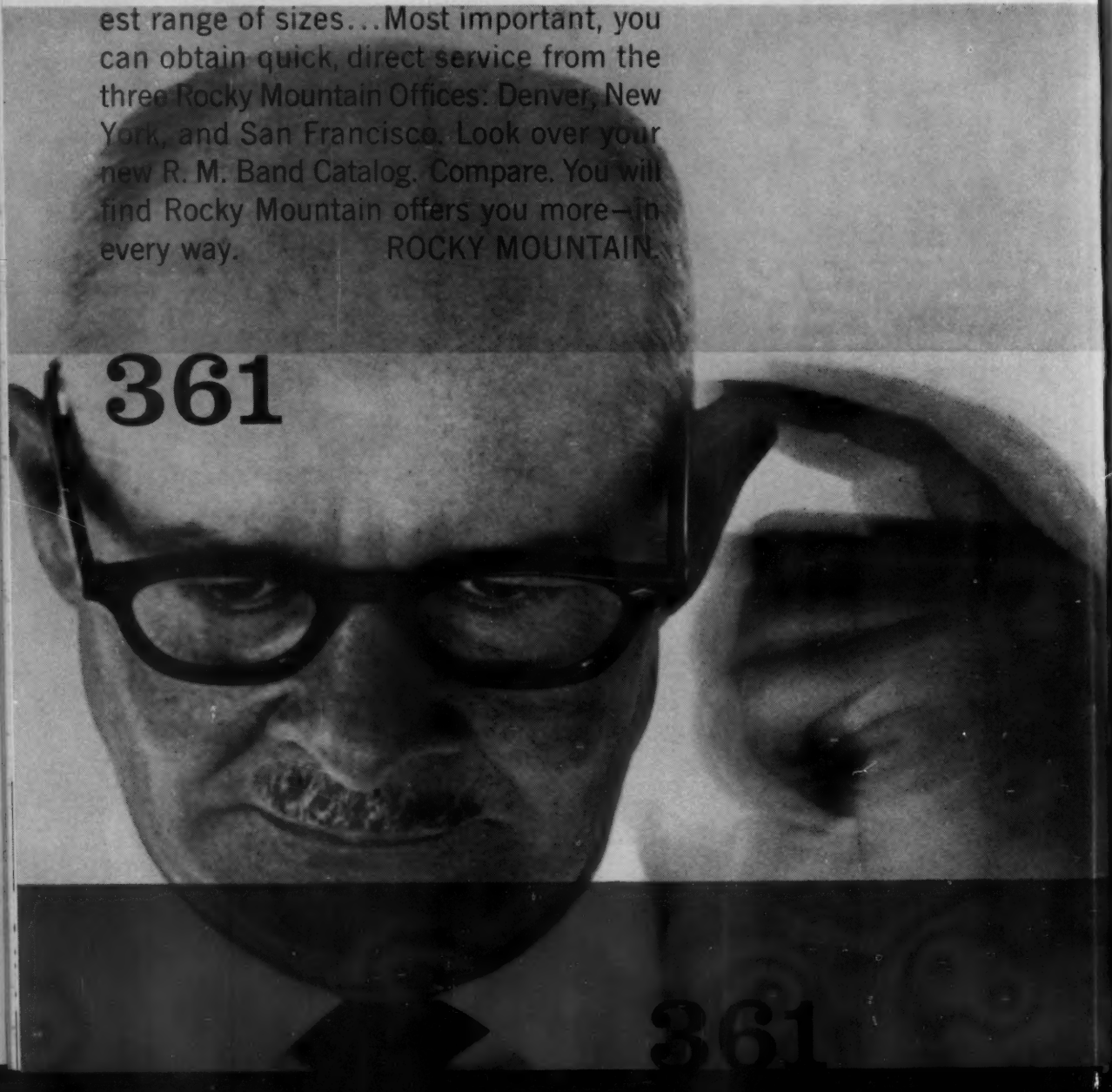

American Journal

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ORTHODONTICS

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Original Articles

PRESIDENT'S ADDRESS, SOUTHWESTERN SOCIETY OF ORTHODONTISTS

THE VANTAGE GROUND OF TRUTH

THERMON B. SMITH, D.D.S., LITTLE ROCK, ARK.

ONE of the great scientists at the beginning of the modern world was the seventeenth-century Englishman, Francis Bacon. In his essay "Of Truth," he says: "No pleasure is comparable to the standing upon the vantage ground of truth." When I say that I welcome you with all my heart to Little Rock for this thirty-eighth annual session of the Southwestern Society of Orthodontists, you can be sure that my pleasure is real and great, for I am "standing on the vantage ground of truth." You all know that Bacon's saying holds true in big things as in little. Moreover, throughout all our professional activities, it is not only the greatest pleasure but also the greatest necessity that we stand "upon the vantage ground of truth."

The difficulty, of course, is to be sure of where that vantage ground is. In the profession of dentistry as a whole and in our specialty, there are many and varied problems to be solved. We make progress in membership, in zeal, in knowledge, and in technique, but still the problems remain. Their continued presence might, at first glance, seem to dictate a degree of pessimism, but that would be a mistake. It is by the solving of problems and by discovering the vantage ground of truth that we grow and reap our greatest happiness. Luckily, our capacity for growth is as infinite as the truth itself.

Presented before the Southwestern Society of Orthodontists, Little Rock, Arkansas, Oct. 6, 1958.

It is not my intention to dwell specifically on all the problems that confront us. I do want to remind you of a few of them, however, for I believe that every little nudge in the direction of a more complete and more immediate realization of what those problems are is a nudge in the direction of that truth, whatever it may be, without which we cannot hope to continue the progress bequeathed to us—progress which it is our responsibility as well as our privilege to augment. I also hope to put before you a proposal which, from some points of view, might be considered a minor one but which I value not because it is my suggestion but because I believe that it will help in the solution of a problem. It will help a little, I hope, in securing another foothold on the vantage ground of which Bacon spoke.

THERMON B. SMITH

One of our problems, as you know, has been the setting-up of qualifications for admission to our organization. I was privileged to attend the meeting of the Board of Directors of the American Association of Orthodontists in New York when this board was working on standards of qualifications and admissions. You will be proud to know that our Society was ably represented by our director, Dr. Nathan G. Gaston, and that because our Admissions Committee had the foresight and ability to work out the requirements of an admissions committee and the requirements on admission, almost all the proposals

set forth by our Admissions Committee were well received and were accepted with little or no alteration as standards by the American Association of Orthodontists. We have made a great step forward here, but it would be folly to sit back complacently and think that the last word has been said. Progress continues. Standards change. I believe that the new problem with respect to the subject of admissions is to retain a certain flexibility of mind which will ensure that we will never reject what is sound because it is new and never lose our forward position on the vantage ground already gained.

Loss of flexibility can become a serious stumbling block in the path of progress. For example, university authorities providing orthodontic graduate and postgraduate courses claim that such courses give the student a broad base of orthodontic education and teach him the whole field. In fact, the opposite is true. According to a report of the Education Committee of the American Association of Orthodontists made at the New York meeting, many of the big universities teach only one method of treatment. Other universities give a small percentage of time to the teaching of other methods. Just how much this percentage of time is may be suggested by the case of the University of California. For example, in the report of the Councils of the American Dental Association in the July issue of the *Journal of the American Dental Association,* the University of California states that it teaches the edgewise mechanism *almost entirely.* A representative of the University of California stated at the Michigan Workshop that they "teach the edgewise technique, *period.*" I believe it fair to say that, whatever the claim, the schools are probably teaching one method of treatment in about 95 per cent of the cases.

It would seem that while the basic principle of breadth in orthodontics indicates the sound procedure for graduate and postgraduate courses, academic practice actually amounts to the cultivation of narrowness. A doctrinaire educationalism dominates our graduate and postgraduate program. In my opinion, this narrow, inflexible system works a lot better for career educators than for the practitioner of orthodontics. Teachers lay down the law regardless of any clinical experience to the contrary. Obviously, this is no way to proceed in the difficult task of arriving at truth. The essential problem that we face here is to develop an examining and approving agency for orthodontic graduate and postgraduate courses. The philosophy behind such an agency ought to include the clear concept that truth has many facets. This agency ought to approve the type of education whereby the orthodontic graduate learns the basic principles of all proved and accepted methods. Only then will he be equipped to choose the method most appropriate to a particular case and to find and develop his own particular aptitude.

I am reminded at this point of the problem of preceptor and associateship training. Training for medical specialties is given through graduate, postgraduate, and hospital residency programs—mostly through hospital residency and internship programs. Since orthodontics is not a hospital practice, a residency program in hospitals is impossible. However, the associateship plan of training compares favorably with residency training programs in the

medical specialties. I believe that there is an inevitable weakness in a graduate and postgraduate program which is short on practical experience. The associateship program can provide the broad base of clinical experience and practice which makes academic theory and training meaningful. Our problem here is again a matter of flexibility. Both types of training are necessary and very valuable. We cannot commit ourselves to either one exclusively. Keeping our feet on the vantage ground of truth is not so simple and easy as all that.

So much for some of our major problems. I have touched upon a few to illustrate what I believe is, after all, one of my most profound convictions about the specialty of orthodontics or about any specialty. A specialist is not a man who learns more and more about less and less. He is a man constantly striving to enlarge the scope of human progress. He cannot afford to be narrow. It is his duty to see his work in a very broad relationship to all other human endeavor and to retain the flexibility of mind which will enable him to cooperate effectively without damage to quality in his own field.

I said earlier that I wished to put before you a proposal of my own—a potentially advantageous one, I believe, in that it would provide for smoother operation within our organization and would also tend to prevent unpleasant occurrences such as have happened in the past. I think that the Orientation Committee of each constituent society should have a procedure by which it could properly inform and direct new members and associate members in the presenting of grievances, changing of by-laws, etc. In addition to indoctrinating new members in the ethics and professional conduct of orthodontics, the Orientation Committee should also explain fully the workings of the society and the obligations and responsibilities which the new members assume. This would include the new member's implied agreement to abide by the normal routine and procedures of the organization. In order that the duties of this committee may be carried out more efficiently and more closely correlated each year, I believe that it would be advisable for a member of the Board of Directors to be on the committee. For this reason, I suggest that the third immediate past-president be the chairman of the Orientation Committee and that two other members be appointed, one for a period of one year and one for a period of two years, with one two-year appointment to be made each year thereafter.

In conclusion, I wish to thank in all sincerity those who have assisted in the activities of the Society during the past year. To my program chairman, John W. Richmond, assisted by Howard Dukes; to my clinic chairman, George E. Mindeman; to my local arrangements chairman, Clarence W. Koch, assisted by Forrest Dunaway; and to all the efficient committee members who have helped make this year a year of accomplishment, I offer my deep appreciation. On behalf of the Society, I would like also to thank our exhibitors for their assistance in making our meeting a success. To my fellow members, thanks for your attendance now, for your support throughout the year, and for affording me the privilege of serving as your president. Once again, to our visitors, I say "welcome." We are happy and privileged to have you here for this occasion.

It is fitting that, having begun with a great scientist, we should summon him back for an apt last word. Bacon is the man to show us where we ought to stand in relation to our profession. My thanks, or those of any individual, are a very small thing. As Bacon says in *Maxims of the Law:*

> I hold every man a debtor to his profession, from the which as men of course do seek to receive countenance and profit, so ought they out of duty endeavour themselves by way of amends to be a help and ornament thereto.

1122 West Capitol at Cross.

ELASTIC-THREAD LIGATURE AS AN AUXILIARY FOR TOOTH MOVEMENT

MARVIN C. GOLDSTEIN, D.D.S., ATLANTA, GA.

THE orthodontist has at his disposal many appliances to use for tooth movement. The principal major appliances used by the majority of orthodontists are (1) the edgewise mechanism, (2) the twin-wire appliance, and (3) the labial and lingual arch.

With each of these mechanisms, auxiliaries are used to accomplish individual tooth movements. Coil springs, finger springs, wire ligature, silk ligature, and rubber elastics have been the principal auxiliaries used. All of these serve well, and each has its indications as well as its limitations.

It is the desire of all orthodontists to correct the presenting malocclusion as quickly as possible, as well as possible, and with as little discomfort to the patient as possible. With these ideals in mind, I would like to present a new auxiliary for tooth movement, namely, elastic-thread ligature.

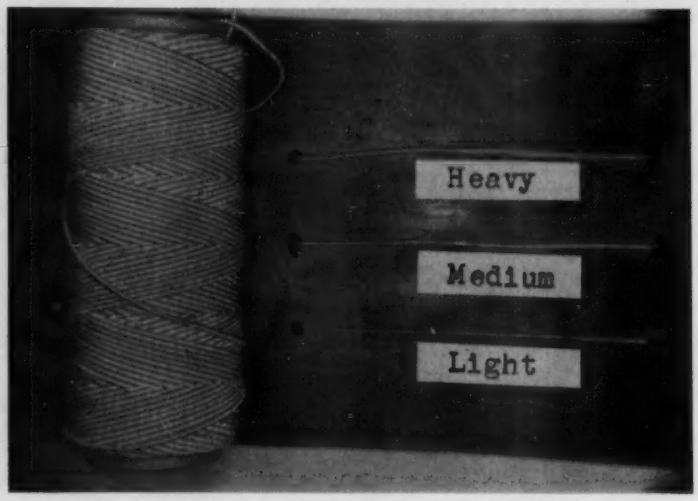


Fig. 1.

The thread ligature is a specially prepared rubber, similar to the kind used in orthodontic elastic bands and covered by closely woven nylon thread. It is available in three sizes—No. 1, light; No. 2, medium; and No. 3, heavy (Fig. 1)—and has been manufactured for orthodontic use.

Presented before the Southern Society of Orthodontists in Miami Beach, Florida, October, 1957, and before the American Association of Orthodontists in New York, New York, May 1, 1958.

I have used elastic-thread ligature for the past several years and have found it to be a most valuable auxiliary for tooth movement. In space closure the thread ligature permits ease of adjustment and performs an "automatic" constant adjustment.

Fig. 2 shows how the ligature can be tied to close anterior or posterior spacing. For upper anterior teeth and premolars, the medium ligature is usually sufficient. Adjustments can be made at two- to four-week intervals or as the condition demands.

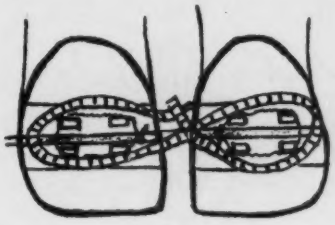


Fig. 2.

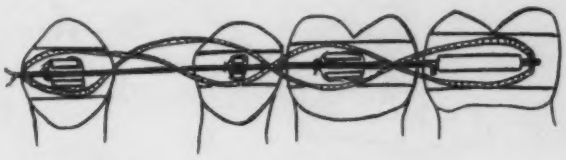
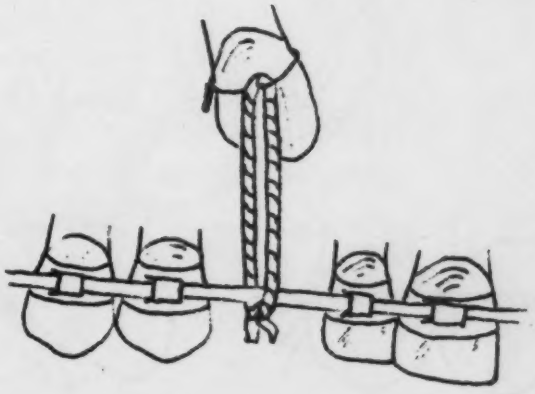


Fig. 3.



A.

B.

Fig. 4.

The light ligature is frequently used in final finishing movements as well as in beginning movements in the lower anterior area. The heavy ligature is necessary in the molar area and frequently in other areas of resistant movement.

Canine retraction in those cases requiring first-premolar extraction can be accomplished with the thread ligature (Fig. 3). The same principle is employed if a second premolar is extracted. A ligature is tied around the first premolar, and another is tied around the canine (Fig. 7, *A*). The ligature is stretched tightly and tied with a surgeon's knot. A long channel bracket is used, so that the tooth stays upright as it is being carried distally.

Fig. 5.

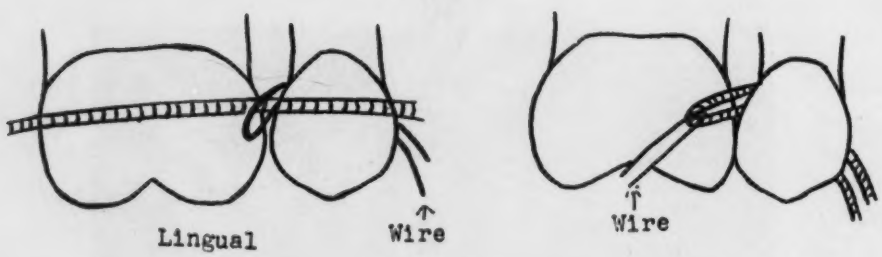


Fig. 6.

The thread ligature is also a valuable aid in bringing down a high or unerupted canine or incisor (Fig. 4, *A* and *B*). Elastic thread is much more gentle and efficient than stainless steel ligature tied to the arch wire. Lingually placed or embedded teeth can be brought into position in a similar manner (Fig. 7, *A* and *B*).

Tooth separation can often be accomplished by drawing the ligature under the contact through the gingival embrasure area and then tying it tightly around the contact area (Fig. 5). It can be drawn through the embrasure by using a piece of steel ligature as a "needle" (Fig. 6).

For complete arch constriction or space closure, the ligature permits a gentle, gradual movement. This same adjustment can be used for retraction of anterior teeth after canines have been brought distally. Amount of anchorage needed would be a deciding factor. This type of adjustment is shown in Fig. 7, *E*.

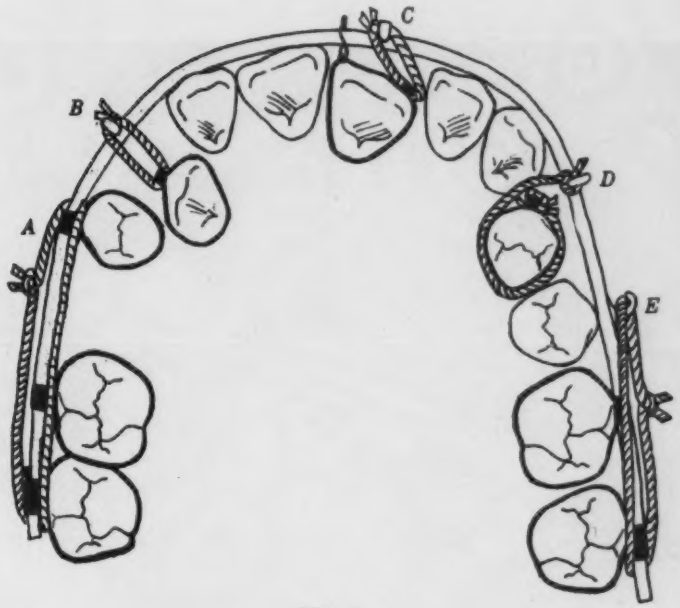


Fig. 7.

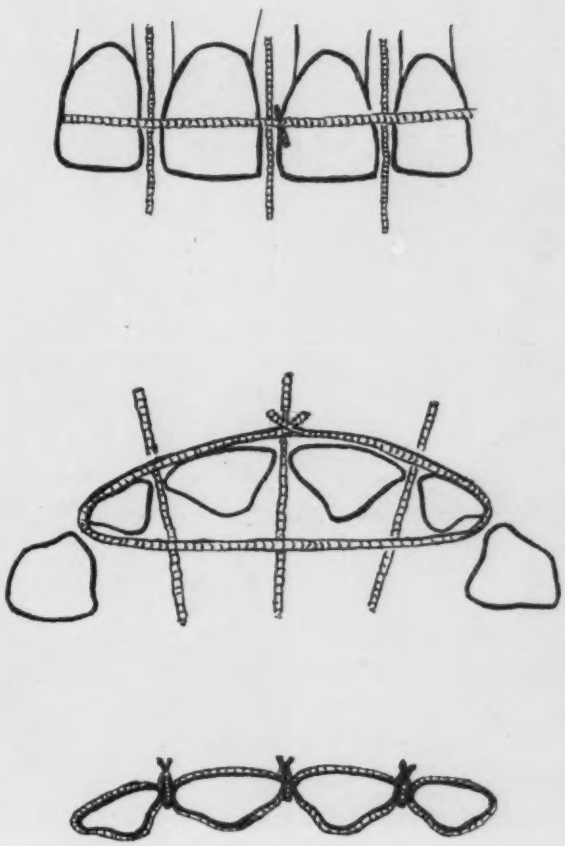


Fig. 8.

Fig. 8.—*A*, Medium ligature around tooth. Light ligature gingival to horizontal ligature between each two interproximal areas. *B*, Cross-section view, labiolingual. *C*, Cross-section view after light ligatures are tied, thus bringing entire elastic ligature thread snugly against tooth.

Fig. 9.—*B*, Lingual arch showing spring to correct right-side cross-bite as well as help move central incisors together. Lateral incisors have been added at finish of treatment. *C*, Edgewise bands on central incisors. A 0.021 by 0.025 inch arch has been used so that central incisors would remain upright. *D*, At finish of treatment. *E*, Finished with lateral incisors added. *F*, Resulting smile.

Rotation of teeth can also be accomplished very effectively. The elastic permits a constant movement of the rotated tooth (Fig. 7, *C* and *D*).

The elastic-thread ligature is an ideal auxiliary for finishing cases in which spaces have been left as a result of band removal. This can be accomplished as shown in Fig. 7, *E*.

Fig. 8 also shows a manner in which the ligature can be used for final anterior space closure.

The thread ligature can be used very successfully in conjunction with other orthodontic appliances. Fig. 9, *A* (M.S.) shows a case treated by elastic-thread ligature in conjunction with a lingual arch. The patient, a 25-year-old woman, had an upper right cross-bite and wide anterior spacing as a result of the congenital absence of lateral incisors. An upper lingual arch was inserted with a spring to bring the right posterior segment into a buccal position (Fig. 9, *B*). Elastic-thread ligature was tied about the upper central incisors, and they were drawn together. In approximately five months the cross-bite was corrected and space was opened for the lateral incisors which were added onto the lingual arch to act as a temporary retainer. Fig. 9, *C* shows the final results.

Through use of the elastic-thread ligature, those cases requiring extraction of first premolars can frequently be treated more easily and efficiently, as per the following technique: All teeth are banded with edgewise bracket bands with the exception of the second molars, which hold rectangular tubes; 0.018 arches are tied in with stops against the second molars. Medium elastic ligature is tied from the canine to the distal aspect of the molar tube, as shown in Fig. 3. The ligature is changed at approximately three-week intervals until the canine is in contact with the second premolar. At this time an 0.020 inch arch is inserted with only a tie loop distal to the canine on each side. The second molar, first molar, second premolar, and canine are tied together with steel ligature. Medium elastic ligature is tied from the tie hook on the arch to the distal aspect of the second molars on each side. This procedure closes the remaining space, and the case is then finished in the conventional pattern as a nonextraction case. The length of time required to treat the case properly seems to be significantly shortened through this procedure.

There are many other uses for the ligature; the orthodontist will ascertain these from experience.

CONCLUSION

Orthodontic elastic-thread ligature of the type especially prepared for orthodontic use, can be a valuable auxiliary aid in the armamentarium of every orthodontist. It is economical, practical, and easy to use, and it can be adjusted in a minimum amount of time. Whether one uses multiband appliances or others, the elastic ligature can be used in the manner outlined here.

950 West Peachtree St., N.W.

EXTRACTIONS IN THE PROBLEM CASE

PAUL V. REID, D.D.S., M.S.,
PHILADELPHIA, PA.

PROGRESS in any field has always involved differences in opinion. In orthodontics, controversies over the extraction of teeth have raged almost constantly since the historic differences of opinion between Angle and Case with respect to this subject. That opinions are still poles apart is illustrated by the following sentences taken out of context from two papers that appeared in the JOURNAL within the past year.

> (1) "I wish to say that in thirty-seven years in practice I did not find it necessary to extract teeth for the treatment of any kind of malocclusion." (This was from Sved's[1] article entitled "The Problem of Extraction.")
>
> (2) "In recent personal survey of patients coming to my office for treatment, a total of 335 consecutively diagnosed cases were considered. Of the total, diagnosis indicated that 300 required the removal of four premolar teeth, while only thirty-two were treated by non-extraction procedures. The remaining three cases were treated by removing only the maxillary first premolar teeth." (This was from an article by Jones[2] with the unlikely title of "Some Considerations Concerning the Planning and Limitations of Retention"—obviously not referring to the retention of premolars!)

Both Sved and Jones, however, are epitomizing the dissatisfaction attendant upon overconservatism, on the one hand, and unwarranted radicalism on the other, in orthodontics.

Not all problems in orthodontics are confined to extractions. As Ashley Howes[3] said in a recent paper, however, "Only when a man extracts in 100 per cent or in none of his cases does he have no extraction problems." It may be assumed, then, that the rest of us have had some cases that may be classed as extraction problems and also that we have somehow handled these in a reasonably satisfactory manner by application of experienced judgment. In recent years I have spent some of my time helping in the training of graduate students; to them, and probably to others who have recently entered the field of orthodontics, the subject of diagnosis as it concerns the removal of teeth is difficult

Read before the Great Lakes Society of Orthodontists in Detroit, Michigan, Oct. 22, 1957, and the Northeastern Society of Orthodontists in Montreal, Canada, Nov. 3, 1958.

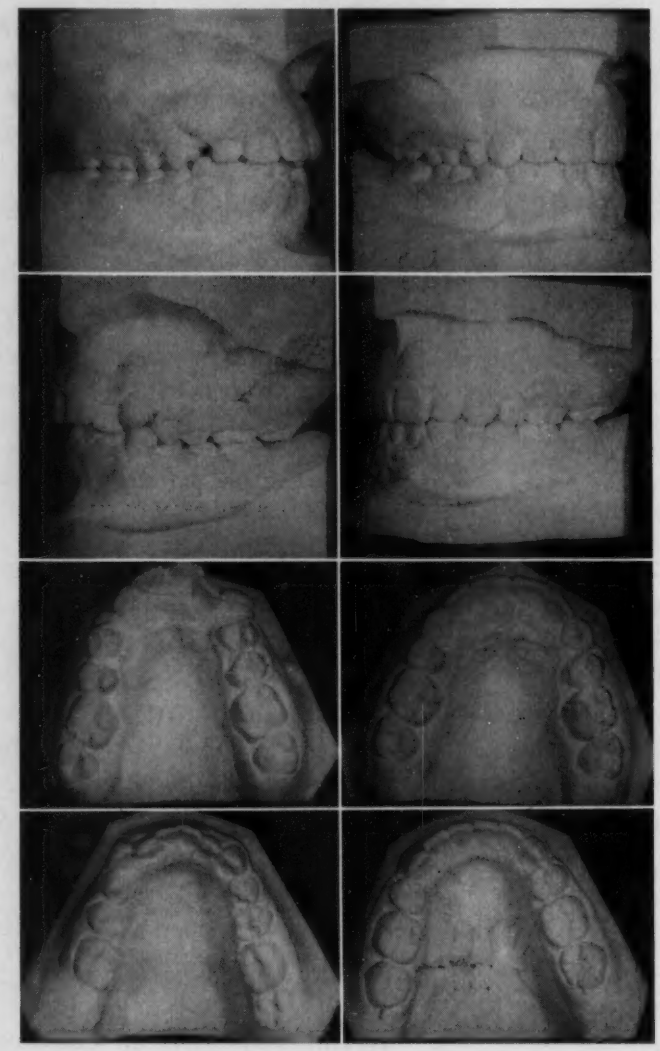
and confusing. To them the borderline zone between extraction and nonextraction is wide, and opinions as opposite as those quoted earlier are confusing, indeed, when judged by one with a background of limited experience. My primary purpose in this article will be to take neither side in the controversy but to approach the problem with a different perspective and possibly throw a different light on the subject. A student might well ask: "Why the controversy over extraction in orthodontics today when so much has been done in the way of research in the field of radiographic cephalometry? Do not all orthodontists have access to the same facts and are not scientific conclusions open to all honest minds of sufficient capacity?" This question is paraphrased from a syndicated column in the *Philadelphia Inquirer* by Edgar A. Mowrer, who was speaking not about orthodontics but about the possible dangers to mankind in the continual tests of thermonuclear weapons:

> There the argument is simple—atomic tests loose particles which multiply spontaneous biologic mutations. Most mutations are harmful (by definition, if not by experimental demonstration). Moreover all exploding bombs release strontium 90, which, penetrating human bones, causes cancer. Therefore, atomic explosions are harmful and should be stopped, say one group of respected scientists. It sounds impressive until one notes that equally famous scientists, possessing the same knowledge, claim the amounts of noxious substances so far released in the near future is so small as to be insignificant. The tests should go on. Both groups, complaining scornfully of the politicians' failure to agree on a coherent foreign policy ever since the creation of the A-bomb, have little new or constructive to contribute towards the formulation of such a policy and differ in their views just as much as the unscientific politicians.

There is a perfect corollary in orthodontics, and conclusions differ just as widely when the facts are interpreted in the light of each practitioner's clinical experience. Every orthodontist formulates his own policy concerning extraction. This may not be a *fixed* policy, and it becomes modified by the impact of experience and the lessons of failures. As we look back over past failures or as we recognize them in the relapsed arches of the parents of second-generation patients many of us are willing to admit that we have erred on the side of conservatism with respect to sacrificing teeth. As a result of such failures, many members of our profession have made a remarkable switch in their attitudes in the last twenty years. Since a large portion of the business sessions of our recent national meetings have been devoted to the question of training orthodontic students, it would be interesting to see how these men are being influenced in their thinking along these lines.

If his graduate training or preceptorship is of an arbitrary nature, the student emerges with a fixed policy, and initially, at least, he is unconfused in his thinking. On the other hand, when he is exposed to *varying viewpoints* and *different philosophies of treatment* it is enlightening to witness his reaction. Personally, I find that on the basis of the evidence available from the limited number of cases that he sees in the clinic, the student is inclined to favor extraction over nonextraction. As an example, Fig. 1 shows a case treated in our clinic. The patient was a girl aged 11 years 6 months. This

was not a real deficiency case; routine growth studies done prior to treatment and the cephalometric tracing revealed no marked discrepancies from the norm in either her growth pattern or her profile. Nevertheless, four premolars were removed and edgewise arch therapy produced a satisfactory result. The lower incisors are upright; the extraction spaces are closed. Retention apparently will pose no problem. Treatment time, which is somewhat slow in a clinic, was only eighteen months in this case.



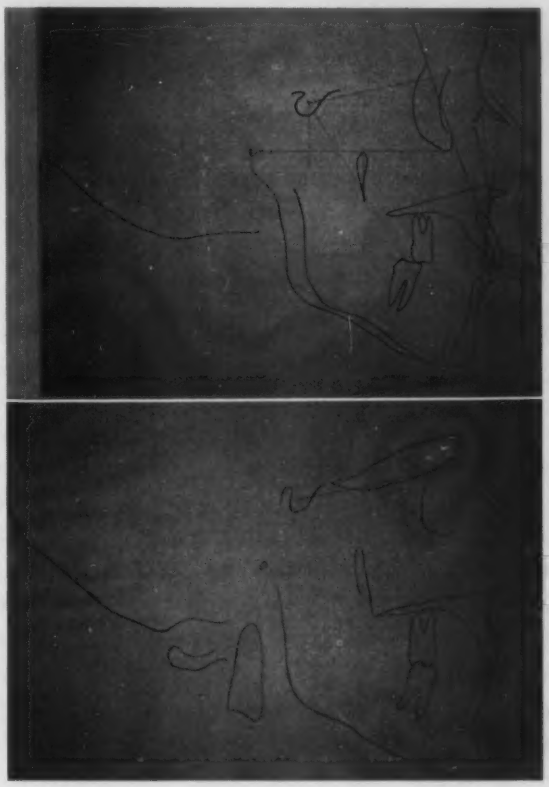
A.

Fig. 1.—Four-premolar-extraction case involving only moderate lack of room in the arches.
(*Continued on opposite page.*)

A number of factors enter into the student's favorable reaction to this type of treatment. Probably foremost is the mechanical therapy employed. In any case in which the crowding is only moderate and in which some degree of mesial movement of the distal segments is necessary to close spaces, as in

this instance, a multibanded technique is almost essential. When the edgewise technique is chosen, the student is impressed with the rationale of treatment planning and the precision of step-by-step progression. Conservative treatment, especially if another technique is employed, seems empirical by contrast and, since results are accomplished less by mechanics and more by reliance on growth, progress is likely to be far slower.

Definitely a factor, also is the inescapable fact that errors on the side of overconservatism (for example, overestimating the growth potential of a case, the stability of available anchorage, or the cooperation obtainable from the patient) are discernible almost from the start. They become apparent early in treatment through difficulty encountered in creating space, sometimes because it is impossible to correct arch relationships and sometimes because an open bite has been produced. Conversely, errors in the opposite direction are more likely to be of posttreatment importance and do not interfere with attaining tooth alignment.



B.

Fig. 1. Cont'd.—(*For legend, see preceding page.*)

Still other influences are at work to affect the student's way of thinking with respect to diagnosis. Radiographic cephalometry, admittedly indispensable in the field of research in growth and development, has become increasingly popular in the clinical field. Considered essential by some, and

accepted as helpful by others, it falls short of expectations when substituted for experience. When taken in series as a measure of growth prior to or during treatment, cephalometric tracings fulfill a useful purpose. If confined to a subordinate role and used solely as an adjunct to diagnosis, the widespread acceptance of cephalometry would be assured. In principle, this is all that is advocated. In practice, however, it too often becomes a substitute in diagnosis for the patient himself, and the very nature of cephalometric analysis sets the user to thinking in terms of averages. Krogman and Sassouni's masterful *Syllabus on Cephalometry* used as the starting point for the Roentgenographic Cephalometric Workshop* held in Cleveland last spring, eloquently points up the enormity of the task of ever establishing a simple, workable analysis or standard. Some seventy-odd methods are digested and applied to a common case.

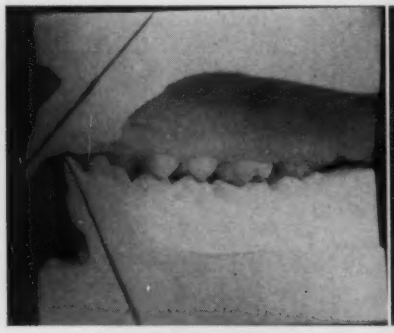


Fig. 2.

Fig. 3.

They failed to agree even on some major points. Perhaps a standard compiled from the extremes of individual norms would be more fitting to apply to a specific case than those now in use, since inherent dental anomalies and facial disharmonies might make the usual norm so far beyond attainment that it scarcely serves even as a guide. Needless to say, the resulting range of variability would be such that a standard of this type would be valuable only as it emphasized the futility of applying averages to the individual patient.

To become a successful clinician, the student cannot afford to overlook the basic limitation of radiographic cephalometry—that it is, as commonly used, a one-plane representation of a three-dimensional problem. The sagittal section of the cast shown in Fig. 2 immediately suggests the possibility of extraction because of the procumbency of the incisor teeth; yet, no one would attempt to make such a decision from a cast alone. Unfortunately, just such a limited projection of a malocclusion on a cephalogram is sometimes accorded far more importance. In contrast, the frontal section of the cast shown in Fig. 3, with the favorable inclination of the long axes of the lateral segments, indicates that substantial expansion is possible and, taken alone, would certainly justify a conservative approach. The limitations of such fragmentary views of a malocclusion obtained from a cast are all too apparent. Unfortunately, the additional information which admittedly can be picked up in a cephalometric x-ray

*For a detailed report on the Workshop, see AM. J. ORTHODONTICS 44: 899-939 (December), 1958.

often disguises the limitations thereof. As it happens, the casts in Figs. 2 and 3 are of the same case. Treatment without extraction produced the result shown in Fig. 4.

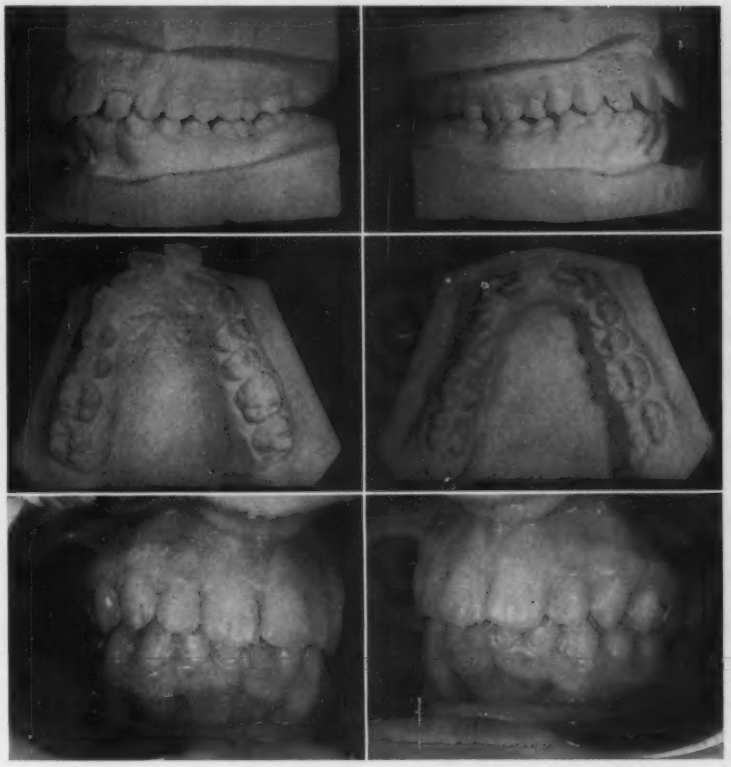


Fig. 4.—Nonextraction case shown in sectioned casts in Figs. 2 and 3.

I do not know whether or not this same preference for extraction exists among other groups of students with similar training, but I suspect that it is a rather typical reaction. This means that in any case in which there is the slightest doubt as to the possibility of creating sufficient space, the student will want to extract. By common usage, "extraction" in orthodontics today has come to mean removal of four premolars. The various appraisals of the availability or lack of space in the dental arches for the amount of tooth structure present are almost universally interpreted to indicate the removal or retention of premolars. In the true borderline case, extraction of four premolars, involving the removal of some 28 mm. of tooth substance, is a drastic and radical procedure, especially since the extractions are often done shortly after these teeth have erupted and before the prepubertal growth spurt has had a chance to change the picture completely. Premolar extractions are not a panacea. In a deep overbite case they tend to increase the overbite. In many cases they are responsible for the production of bimaxillary retrusions, which are open to the same criticism from an esthetic standpoint as bimaxillary protrusions. Furthermore, cases so treated are certainly susceptible to relapse, just as are nonextraction cases, but when it occurs the relapse takes the form of spaces reopening

rather than teeth crowding. There are two important facts to take into consideration: First, the nature of the relapse protects the orthodontist from criticism, since it seldom affects the alignment of the six anterior teeth. Thus, it does not concern the patient or his parents, and in many cases the orthodontist himself is never aware that the end result was not exactly as when the patient was last seen. Second, from a periodontal standpoint, the slight relapse of anterior tooth alignment in the nonextraction case, while of considerable concern to the patient, may be of little importance to the health of the denture, whereas failure to maintain arch contacts and either an acquired or an uncorrected deep overbite may be of considerable importance as a mechanical factor in the production of a periodontoclasia.

It might be appropriate here to point out to the younger men that the most important single factor underlying the current wave of extractions is not-unwarranted confidence in the ability of the edgewise appliance to close spaces. It was this same inherent soundness of mechanical principle and the efficiency of this appliance in producing room in an arch that led to the stubborn insistence upon retaining a full complement of teeth which prevailed for so many years. As the posttreatment evidence accumulates over the years, the pendulum will swing back again to a saner viewpoint.

Regardless, however, of the respective merits of extracting premolars or keeping the full complement of teeth, there is still the borderline case to contend with. One might define such a case as one in which the removal of one-half of a premolar in each quadrant would serve the needs of treatment perfectly. Since no such ideal solution to the problem of handling these cases seems near at hand, if one wishes to avoid certain of the drawbacks attendant upon either of the conventional alternatives in treatment it becomes mandatory to view the whole question in a different light. Before doing so, it might be appropriate to note some observations on seeing which appeared in a recent *Reader's Digest* article,[4] the essence of which is that "it is always possible to learn to see more." The article goes on to say that the eye really sees only patches of light and color and that the *mind says* what those patches are, and the mind has only past performance to go on. In seeing, therefore, our previous experience enters in and we see what we look for. You have all heard of the demonstration by the late Adelbert Ames, Jr., in which he used a room in which everything sloped—walls, floor, and ceiling. All distortions were so calculated that to the eye they canceled out. Seen through a peephole, the room looked like a normal room, but a tall man walking across the back of it seemed to shrink in stature for the ceiling was higher in the part of the room that he approached. The mind is more unwilling to accept a room of such ingenious distortion than to accept the man diminished in stature. Moreover, upon first walking into this room armed with a fly swatter, it was impossible to hit an artificial fly on the ceiling. After a few tries, during which time the eyes adjusted to the proportions of the room, the target was hit with normal ease. Just looking at something is not good

enough; we need new experiences with what we are looking at. Then it may look completely different. It may be necessary at times to take more than one look in diagnosing cases which often present far more baffling illusions than the one cited.

With these thoughts in mind, let us try to widen our experience with the subject at hand, the borderline case. We may start by applying the lessons learned from the many cases that we treat which involve teeth missing at the time the patients first come to us for examination. These constitute "compromises," and orthodontists, accepting the conditions as they find them, achieve quite satisfactory results. Most important of all, the treatment is individually tailored to the specific patient. Thus, there is no stereotyped solution to the problem of a congenitally missing lateral incisor. Sometimes the space is closed; at other times it is opened. At times a second deciduous molar with no successor is retained; at other times, although unilateral, it is removed. Every orthodontist has coped with the problem of first molars already missing or sacrificed because of caries before treatment is begun. The resulting occlusion substituting caries-free third molars is usually quite satisfactory. The alternative involves retaining teeth of doubtful life span. Accident cases involving an incisor are often seen after considerable loss of intercanine width has already occurred. At times the most practical solution to the problem is to reposition the remaining three incisors and, if the central incisor is the one missing, to place a porcelain jacket crown on one lateral incisor. Fig. 5 shows random examples of results obtained in cases in which there was no chance to select the extraction site. All orthodontists have treated similar cases with signally successful outcomes, judged on the basis of functional stability and the practical esthetic needs of the individual patient. There can be no better measure of success in treatment.

Prearmed with the experience of such cases, the eye may now see that extractions in the borderline zone are not necessarily limited to premolars in groups of four. If successful results are obtained in the cases that we have just mentioned, it is logical to assume that in specific instances any tooth or group of teeth may be sacrificed with a similarly satisfactory outcome. Thus, in a malocclusion that is symmetrical the removal of four second molars and the driving distally, to a limited extent, of all the posterior teeth in both arches might very nearly simulate the hypothetical "one-half of a premolar" that we have so often wished for. This approach is unconventional but logical, and it is justified by the many, many third molars successfully pressed into service when destruction of second molars by caries dictated such a course.

In a further attempt to "see" more as we look at our problem, we may as well accept the fact that there are disharmonies in tooth size in relation to other teeth as well as to the dental bases. (I do not refer to gross anomalies, such as a twinned tooth or a peg lateral incisor.) Thus, in Fig. 6 the upper left lateral incisor is actually larger than the central incisor, although this was realized only at the time appliances were being replaced at a recementing appointment

Fig. 5.—Random examples of patients who presented missing teeth at the time they applied for treatment. *A*, Congenital absence of upper left lateral incisor. *B*, Congenital absence of both upper lateral incisors. *C*, Absence of both maxillary central incisors due to an accident. The upper right lateral incisor is jacketed. The other central incisor is supplied by facing on lingual arch. *D*, Accident case with upper left central incisor, both lower central incisors, and both lower first molars lost. Upper left lateral incisor has a temporary jacket crown. One lower incisor is supplied by a facing on canine-to-canine sectional arch. *E*, Before- and after-treatment views of case in which three first molars had been lost due to constitutional defect. *F*, Four first molars lost due to caries and upper left central incisor lost in accident. Missing incisor replaced with facing on acrylic horseshoe.

after the patient had seen her dentist with all bands removed. The four anterior bands were being tried on, and the larger-looking of the two left incisor bands slipped up under the gingiva on the central incisor. Only a last minute try-on proved it to be the lateral band and saved the hygienist an unwarranted reprimand for having mixed up appliances. Fig. 7 shows a more easily recognized example of the same condition. Primary treatment of the Class I malocclusion by an orthodontist at Walter Reed Hospital had produced the result shown in the casts on the right. Because of the oversized lateral incisors, there

Fig. 6.—Intra-arch disharmony. Upper left lateral incisor wider than adjacent central incisor.

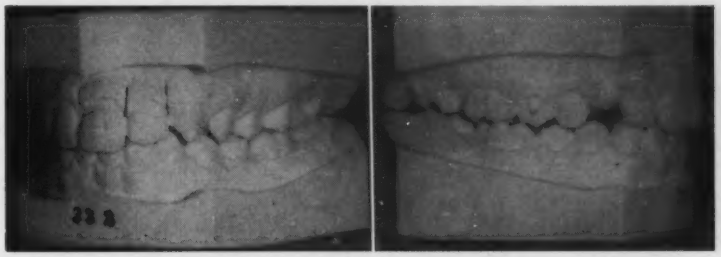


Fig. 7.—Intra-arch disharmony. Upper right canine partially blocked because of oversized lateral incisors, particularly on left side.

Fig. 8.—Intra-arch disharmony. Upper right lateral incisor almost as wide as central incisor.

was no alternative but to extract a premolar on the right side to compensate for this disharmony. This was done with some misgivings. Such action represented a compromise, yes, but it was essential and dictated by individual case characterstics. Fig. 8 shows still another example, that of a girl whose upper right lateral incisor is almost the width of the central incisor. I know that many of

you who were close to Dr. George Moore will remember his perfect upper arch and ideal posterior occlusion; yet, one lower incisor was crowded almost completely out of line—a typical example of interarch disharmony, the reverse of which is the case with perfectly aligned lower incisors, textbook interdigitation of the lateral segments, and an unsightly diastema between the upper central incisors. To anyone using numbered seamless molar bands, it is no surprise to find one molar taking a band that is a size (and, on occasion, even a size and a half) smaller than its mate on the opposite side of the arch. We are aware, too, of the fact that in treating many cases, extraction or nonextraction, perfect interdigitation of lateral segments is easily achieved on one side, while on the other side Class I molar relationship is achieved, but the canine-to-canine occlusion is far from ideal. In part, at least, this is due to minor tooth disharmonies. These same disharmonies make it logical and practical to resort to atypical extraction of second molars in only the upper arch or of single incisors below. Symmetrical premolar extraction in these cases still fails to change the existing disharmony and, although condoned because it is conventional, fails to produce perfection just as does the less sanctioned extraction of alternate units.

Fig. 9 shows several results obtained in cases involving various problems in which atypical extractions were utilized. In the cases shown in Fig. 9, *A* and *B*, a single lower central incisor was removed. These were interarch dental disharmony cases and needed no treatment in the upper arch. Fig. 9, *C* shows a retreated Class II case which had relapsed extensively. Upper second molars were sacrificed to obtain cuspal interlocking by driving the lateral segments distally. Third molars are erupted and functioning at the age of 17 years. Photographs of these cases were taken when they were out of retention. In Fig. 9, *D* are shown the intraoral photographs of a Class I deep-overbite case in which all four second molars were extracted in order to obtain space in the arch. This decision was based on experience gained in treating the patient's brother, who also had a Class I malocclusion in which relapse had necessitated retreatment after removal of impacted third molars. In the case shown, third molars are functioning, incisors are upright over basal bone, and the overbite, while still deeper than normal, is less than if premolars had been extracted. Fig. 9, *E* was taken five years after retention was ended in a crowded Class I case with an incipient open-bite. The upper left first premolar and the lower left central incisor were extracted. Note the satisfactory overbite. Fig. 9, *F* shows the finished casts of a boy who came to our clinic. His was originally a Class I malocclusion with the lower right second premolar blocked out of the arch, with both upper central incisors in cross-bite relation to the lower central incisors, and the upper right lateral incisor not only blocked completely out of the upper arch lingual to the canine and central incisors but also in supraversion. Because of the extensive bite opening and lengthy treatment which would have been necessary to correct the alignment of the lateral incisor, and since some extractions would have been necessary anyway, this case was treated as though the lateral incisor were congenitally missing. That tooth was removed

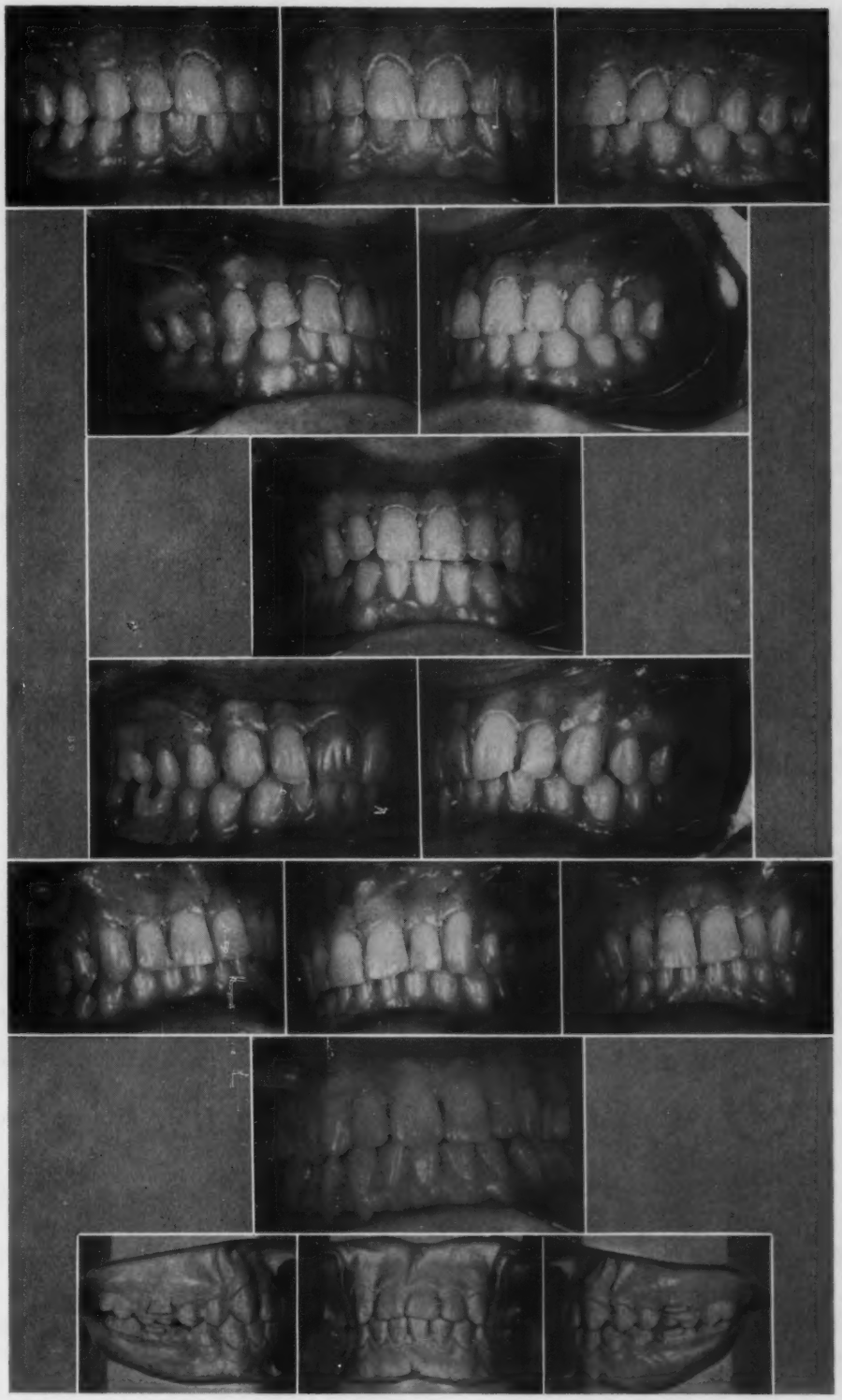


Fig. 9.—Examples of atypical extractions. *A*, Lower left central incisor. *B*, Lower left lateral incisor. *C*, Upper right and left second molars. *D*, All four second molars. *E*, Upper left first premolar and lower left central incisor. *F*, Upper right lateral incisor and lower right second premolar.

along with the blocked-out lower second premolar, and the result is stable and functionally efficient. The esthetics are adequate for the particular needs of this patient.

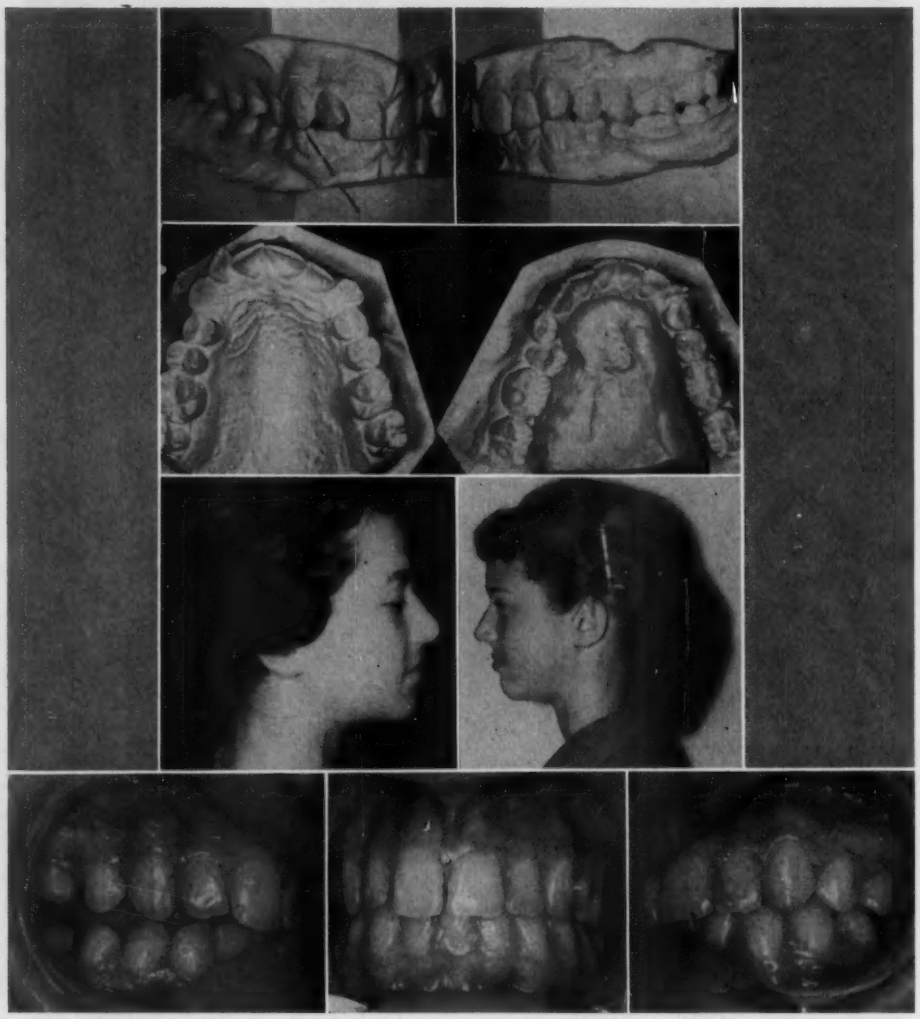


Fig. 10.—Extraction by quadrants, upper right first premolar, lower right lateral incisor. No extractions in other two areas.

In still another effort to see more of our subject, let us examine the following two cases which illustrate an approach from another angle involving a quadrant analysis of the need for extraction. The casts and facial photograph of a patient in our orthodontic clinic shown in Fig. 10 reveal a Class I malocclusion and a perfectly balanced face. It was essential that sufficient room be created for correction of the anterior crowding without disturbing facial balance. It will be noted immediately in the lower right quadrant that the canine is at a decidedly unfavorable angle and that the major portion of lower-arch crowding is concentrated in that area. Since the space requirements of the

entire lower arch would be quite adequately provided by the removal of one incisor and since, with the adjacent lateral incisor missing, the canine would almost automatically upright itself, this extraction was decided upon. To balance this above, an upper right second premolar was selected. On the left side, with the problem of room now solved in the lower quadrant by the proposed

Fig. 11.—Extraction by quadrants: upper left first premolar, upper right second premolar, lower left lateral incisor, none on lower right.

extraction on the other side, it seemed unnecessary to remove any tooth above, and instead the mesiodistal relationship could easily be corrected by driving the upper segment distally. This would also serve to create space without disturbing the midline of the anterior teeth. Finished photographs show that there is no objectionable asymmetry and that facial esthetics have not been disturbed.

The case shown in Fig. 11 was not a borderline case, for there was a definite deficiency in the maxillary base. Nevertheless, a survey by quadrants was warranted in determining the teeth to be removed. On the upper left the first premolar was the logical selection, but on the opposite side the second premolar, because of its atypical shape and 90 degree rotation, was the choice. As for the lower jaw, a look at the occlusal view of the casts shows a fairly symmetrical arch with the left first premolar impacted between the second premolar and a distally tipped canine. Since there was certainly no need to remove two teeth for purposes of attaining room, it was decided to extract only the lateral incisor on the left side and to leave the lower right quadrant intact. In order to utilize the most stable anchorage possible during the closure of the upper extraction spaces, the lower incisor was not removed until most of this maxillary movement had been accomplished in a period of four months. Total treatment time was nineteen months.

If one is willing to accept the extraction of atypical units in selected cases as a practical procedure to meet special problems, there is one other phase of diagnosis which may be altered to fit the borderline case more properly. I refer to the timing of the decision as to extraction or nonextraction. Ordinarily we feel obliged by convention to make this choice at the time of consultation after a review of all the data compiled from the examination, case history, etiology, casts, roentgenograms, etc. We will always take time to do this thoroughly, study dental roentgenograms, trace the cephalometric x-rays, and study the casts, even sectioning the latter and using trial setups. Yet our single, most valuable diagnostic aid, the patient himself, is available only for the short period of examination, and so much information obtainable from no other source—reaction of the teeth to arch-wire stresses and to the pull of intermaxillary elastics, stability of anchorage, degree of cooperation, and oral hygiene—is not revealed until treatment has been under way for some period of time.

Since it is certainly not the patient who wishes to rush us into such a hasty decision, for he usually has a certain natural reluctance to part with teeth, why should we not take advantage of the added information that can be gained from learning more about the case? This is useful only in a borderline case where there is genuine doubt as to the need for any extractions, and it is actually practical only if the initial period of trial treatment is not likely to be entirely negated by an eventual decision to extract four premolars. Since a true borderline case, by definition, presumably might not respond ideally to treatment in either of the conventional ways, atypical extraction is often the answer when such a trial period of treatment still indicates the need for extraction. This type of extraction, as opposed to removal of four premolars, does not upset the progress already made.

As an example of such a delayed diagnosis, let us consider the Class I case shown in Fig. 12. The first major problem is whether or not to open up a space for the congenitally missing upper right lateral incisor. Entering into a decision are not only the considerations of treatment but also the personality and esthetic needs of the patient and the financial aspects of both the orthodontic

treatment and possible temporary and permanent tooth replacements. This decision can be made more easily after the incisors have been aligned and the canine has erupted so that the patient and his parents, as well as the operator,

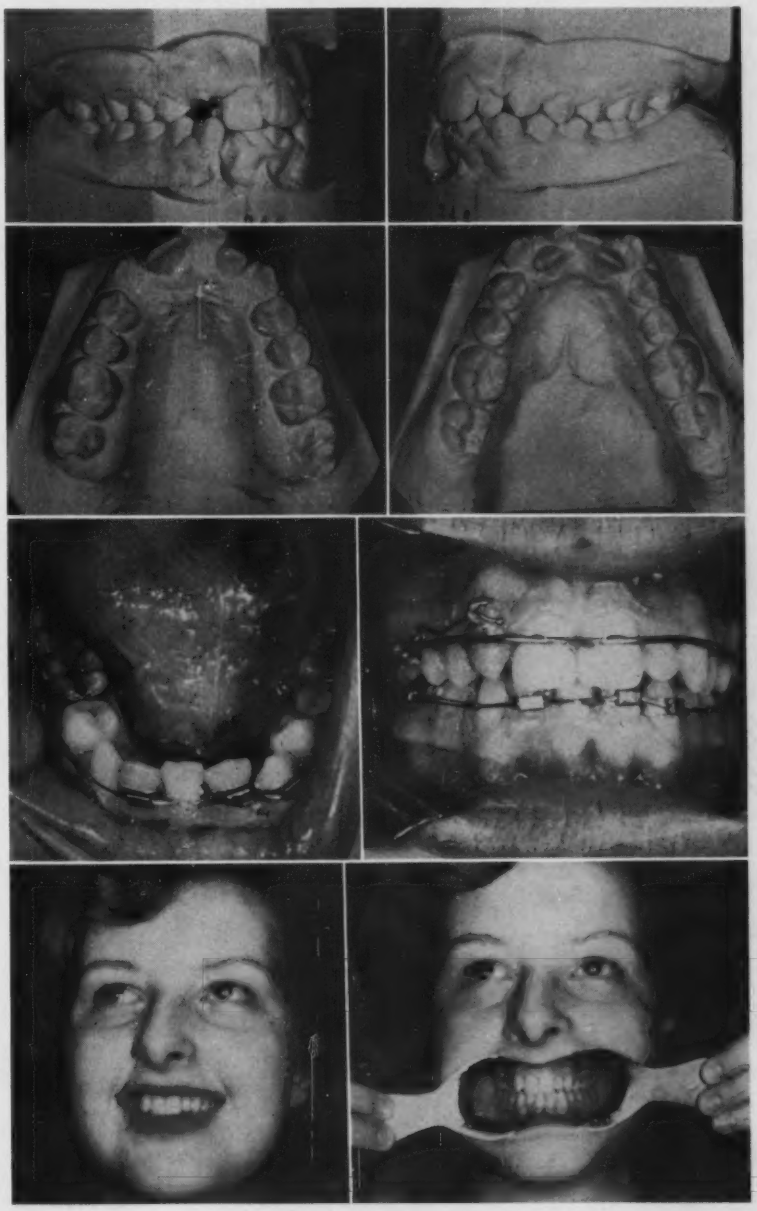


Fig. 12.—Case in which extraction diagnosis was delayed until upper anterior teeth had been aligned and asymmetry caused by congenital absence of incisor could be appraised by the patient as well as the orthodontist.

may pass upon the esthetics of an upper arch in which a lateral incisor is missing. This alignment is easily accomplished in a few months' time; in this particular instance the result at that time, as shown in the progress picture, was mutually satisfactory. Then, to balance the missing lateral incisor above,

a consistently asymmetrical course was followed and the lower right central incisor and first premolar were removed. This left undisturbed the ideal setup which existed on the left side at the start of treatment. The end result was adequate, considering the needs and wishes of the patient.

A case in which such a course might have been followed but was not is shown in Fig. 13. One lower premolar was missing on the left side. As a result,

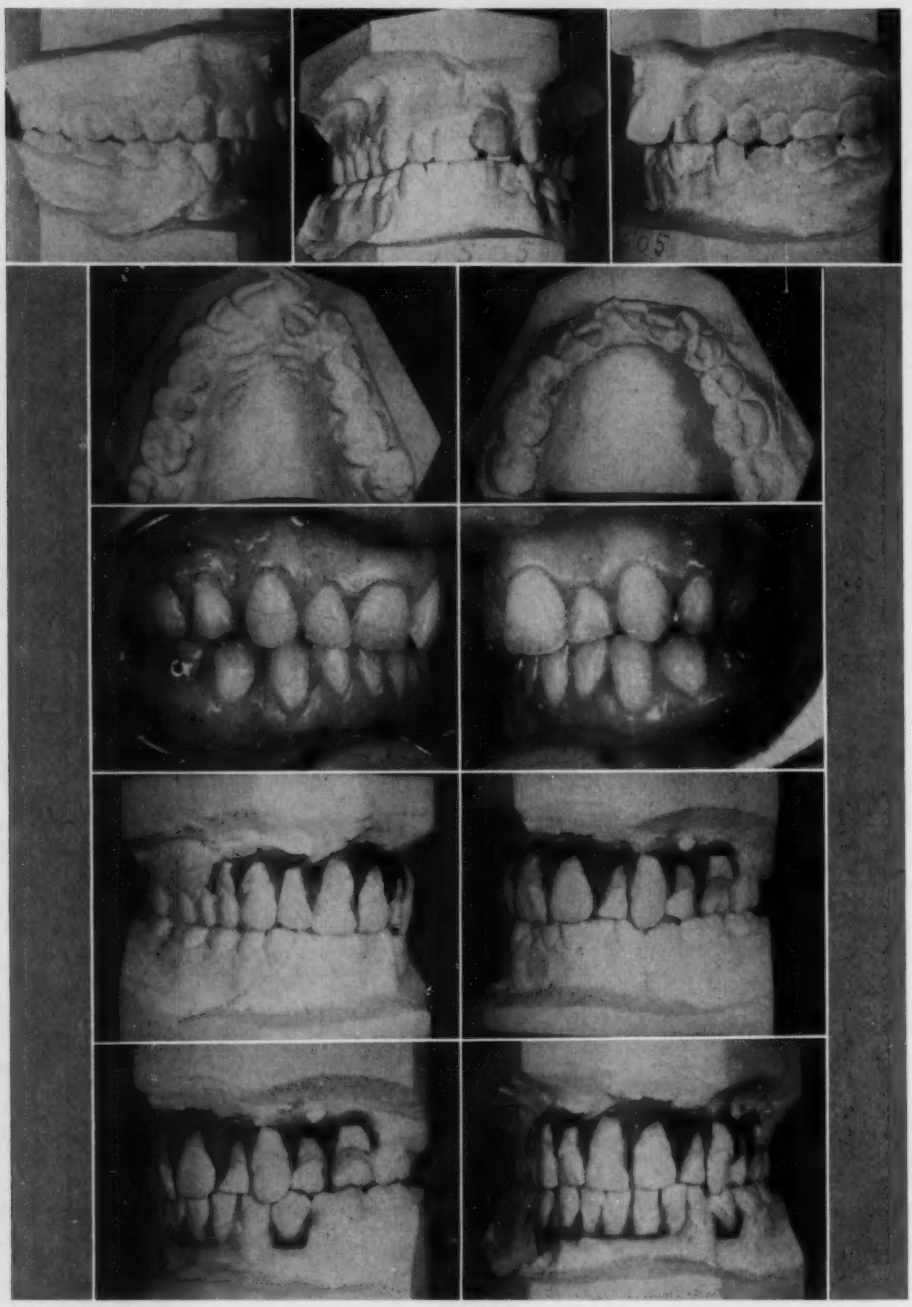


Fig. 13.—Extraction case showing some relapse and possible alternative treatment.

the lower anterior teeth were only mildly crowded as compared with the upper teeth. Following the conventional extraction philosophy, an orthodontist removed the remaining three first premolars. Intraoral photographs show the result four years out of retention. Particularly noticeable is the loss of occlusal and interdental contact of the second premolars on the right side. An alternate procedure would have been an immediate decision to extract the upper left first premolar. Slight expansion on the right side and alignment of the upper incisors would then have permitted a reappraisal of the condition at the stage shown in the upper trial setup. If the asymmetry seemed not too objectionable, the lower incisors could then be aligned. Actually, the midline has not been changed in the completed trial setup. If the asymmetry produced by the initial treatment had been objectionable, then the remaining two first premolars could still have been removed.

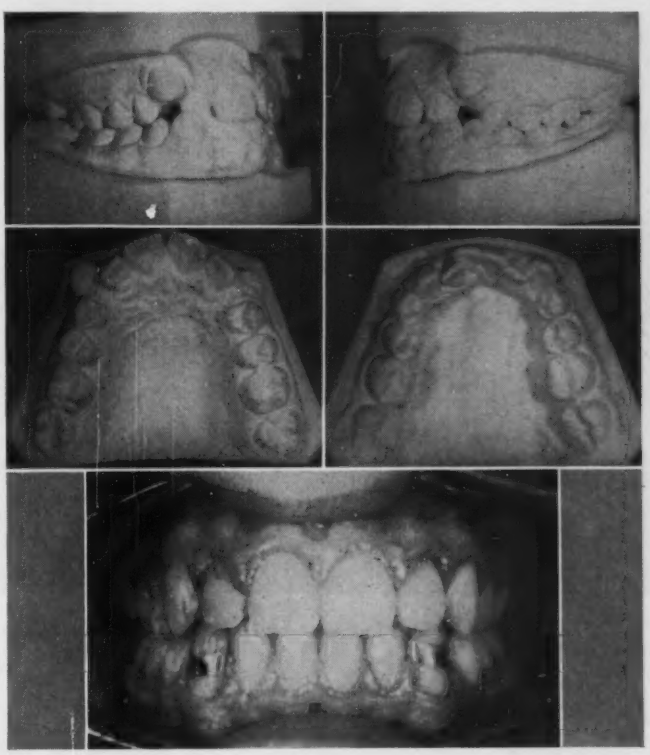


Fig. 14.—Borderline case in which decision regarding extraction was delayed.

A third case, that of a 14-year-old boy, presented blocked-out maxillary canines and crowded lower anterior teeth (Fig. 14). Above the mean in height, with a good hereditary background and well-developed apical bases, this boy might be expected to respond to conservative treatment. However, the vertical overbite was not deep and, with such a large amount of space needed, an open-bite tendency might easily develop. Therefore, treatment was instituted with the reservation that, if it proved necessary, either four second molars or four

second premolars might be extracted. Treatment was uneventful, and no teeth were removed. I feel certain that, had an immediate diagnosis been made, it would have involved extractions.

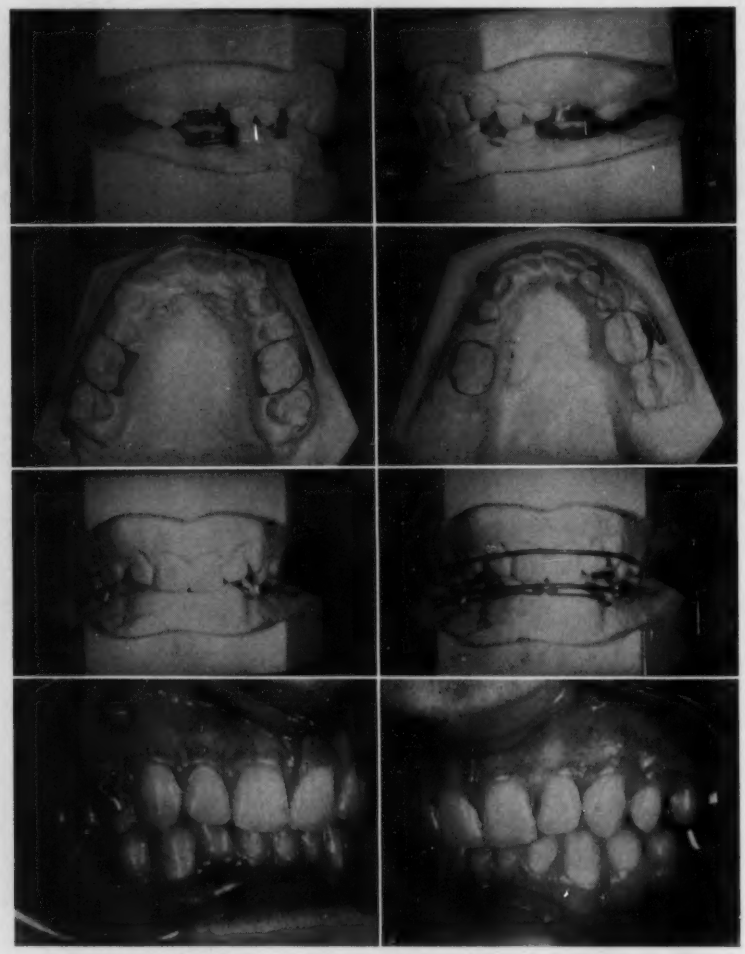


Fig. 15.—Deep-overbite case with conflicting diagnostic factors causing delayed decision regarding extraction. No extractions were needed.

Ordinarily, Class II, Division 2 cases do not offer too many extraction problems. The retruded incisors permit sufficient arch expansion in most cases to correct tooth alignment without the danger of producing any undue incisor procumbency. However, the case shown in Fig. 15 presented a completely blocked-out lower second premolar on the right side, an almost completely blocked-out upper right canine, and a deep vertical overbite. The patient was a 13-year-old girl with a decidedly thin face and small features; she was above the average for her age in height. Premolar extraction would have been highly desirable when each arch was considered separately, but it would have aggravated the problem of reducing the overbite. Removal of upper second molars was a possibility, but it might not have provided sufficient room. Therefore,

treatment was started without a decision about extraction. A fixed bite plane tended to move the upper anterior teeth labially and at the same time permitted expansion of the lower canines and left first premolar which was locked in lingual occlusion. After this expansion was accomplished, an upper twin arch was placed; after a year of treatment the overbite had been greatly reduced, and considerable room had been made. It would still have been possible to extract upper second molars to facilitate further distal movement of the upper molars without changing the treatment plan in the least, but by this time it appeared that such extractions would not be necessary. The last photographs show the results at the end of the second year of treatment, with more than enough room in each arch.

In all four of the foregoing cases I feel that an immediate diagnosis calling for extractions of any kind should not have been made at the start of treatment. In two of them no extractions proved necessary. In a third, additional diagnostic data obtained during an initial treatment period seemed to justify the decision to simplify treatment by means of atypical extraction and, by so doing, to eliminate the need for a lateral restoration. The fourth case was not handled in this way, and an alternative which might have been more realistic was outlined.

SUMMARY

I have the temerity to present this article suggesting procedures that cannot possibly be new to anyone only because there is so little that *is* new in orthodontics. This is substantiated by a glance through Weinberger's *History of Orthodontics*. It is almost axiomatic in our specialty that if a thing is useful, it has been tried before. For some reason, the unconventional in diagnosis as it relates to extraction and treatment planning is seldom discussed. There seems to be almost a stigma attached to the compromise case. In bringing these things into the open, I hope that some of the younger men may sometimes resist the pressure to conform and realize that in a field in which we profess to an awareness of growth and development there is little place for a precise mechanistic approach to every problem.

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MEDICAL ARTS BLDG.

THE LINGUAL ARCH AS A SOURCE OF ANCHORAGE IN CLASS II TREATMENT

A Cephalometric Appraisal of Forty Treated Cases

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THE use of intermaxillary elastics in the treatment of Class II (Angle) malocclusion was introduced at the turn of the century. Baker,[1] in 1904, reported a case, that of his youngest son, on whom he used intermaxillary elastics to correct a maxillary protrusion. Actually, this case was treated almost ten years prior to his published report. At approximately the same time, Case[2] was also advocating intermaxillary force, but mostly in conjunction with headcap therapy.

In the ensuing years the use of intermaxillary elastics for correction of maxillary protrusions became quite popular. Soon, however, the clinical orthodontist realized that as a result of this method of treatment a problem of mandibular anchorage ensued, a problem which still bedevils today's practicing orthodontist.

Through the years various types of appliances, from the full edgewise to the simple lingual arch, have been employed for mandibular anchorage. Brodie's[3] report in 1938 on a series of treated Class II cases sounded a warning note. His cephalometric findings showed that the bulk of tooth movement resulting from the use of intermaxillary elastics was a forward positioning of the mandibular teeth and that very little, if any, distal movement of the upper teeth occurred.

Today it might be said that three distinct schools of thought prevail concerning the use of mandibular anchorage and intermaxillary elastics:

1. Tweed[4] has advocated the use of "dynamic anchorage." He believes that more stability is attained by placing the mandibular teeth in a position of "best anatomic advantage" to resist forces of displacement.

2. Fisher[5] has proposed treatment of most Class II cases with the headcap alone. He has thus eliminated the necessity for the use of intermaxillary elastics.

This thesis, which was given as a partial fulfillment of the requirements for certification by the American Board of Orthodontics, is being published with the consent and the recommendation of the Board, but it should be understood that it does not necessarily represent or express the opinion of the Board.

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3. A majority of today's practicing orthodontists still employ intermaxillary elastics and endeavor to attain a relatively stable anchorage. The full edgewise appliance, the simple lingual arch, the stabilizing plate,[6, 7] or a combination of all of these with headcap reinforcement have been advocated and are being used.

Upon starting orthodontic practice in 1949, I used predominantly a full mandibular edgewise appliance for anchorage, applying the principle of keeping tooth movement to a minimum. This is in conformity with the philosophy of Salzmann[8] and Buchner,[9] who stress that a great deal of tooth movement actually results in breaking down mandibular anchorage rather than creating a greater resistance to displacement. I have also used the removable lingual appliance in those cases which presented excellent mandibular arches. One of the main reasons for favoring this appliance is expressed in Graber's[10] statement that "two-thirds of the average orthodontic practice would consist of Class II cases and that three-fourths of these cases have relatively good mandibular arches." Inasmuch as very little, if any, tooth movement in the mandibular arch is required in many Class II cases, the simplest mandibular appliance that would give adequate anchorage is certainly the appliance of choice.

Headcap therapy, which has been used extensively in recent years, has not proved successful in my practice. Consistent cooperation in a large enough percentage of the patients was unobtainable. Thus, the predominating use of the removable lingual arch in most Class II cases resulted.

HISTORY OF LINGUAL ARCH

The use of the lingual arch dates back to the turn of the century. Its development is usually attributed to the efforts and ingenuity of Lloyd S. Lourie[11] and John V. Mershon.[12] The fixed lingual arch is said to have evolved from the cuspid-to-cuspid retaining appliance. Lourie mainly used the fixed lingual arch and reported many cases in conjunction with the high labial appliance.

Mershon, on the contrary, preferred the removable lingual appliance. He introduced half-round tubes in place of the elliptical ones and was able to control molar rotations when intermaxillary elastics were employed. He stressed the importance of placing the lingual arch as low as possible on the lingual surfaces of the anterior teeth to secure maximum anchorage.

Oliver[13] has reported the use of the removable lingual arch for mandibular anchorage. However, he usually uses the labial arch for reinforcement of anchorage. He furthermore warns that the removable lingual arch should not be considered a universal anchorage appliance.

Johnson[14] is another exponent of the mandibular lingual arch as an anchorage appliance. His method of reinforcement employs the twin-arch appliance with four incisor bands.

Prezzano[15] solicited the opinions of fifty-eight practicing orthodontists concerning their success with the use of mandibular anchorage. Approximately

half of the men who were using the lingual arch were satisfied with it, although most of them realized that some forward slippage does frequently occur.

Hopkins[16] and Fisher[5] stress the inadequacy of mandibular anchorage regardless of whether the simple lingual arch or a multibanded technique is utilized.

Kanter[17] uses a headcap direct to the maxillary arch in conjunction with the twin-arch appliance. Intermaxillary elastics are thus utilized only during the day, usually in conjunction with the mandibular removable lingual appliance.

No study has ever been reported, to my knowledge, in which a cephalometric analysis was performed on a representative sample of Class II cases treated with intermaxillary elastics and the mandibular removable lingual arch.

PROCEDURE OF STUDY

At random, fifty-two completed cases of Angle Class II malocclusion were selected from my practice. In all of these cases the removable lingual arch was used for mandibular anchorage. No extractions were performed; nor were headcaps used, either directly to the maxillary arch or in reinforcement of the mandibular anchorage. In practically all of the cases some degree of maxillomandibular molar correction was required. Forty cases that were considered to be satisfactorily treated were selected from the group to be included in the study. Cephalometric roentgenograms and photographs were purposely omitted in making this evaluation.

CEPHALOMETRIC ANALYSIS

Pretreatment and posttreatment cephalometric plates were traced on each of the forty cases. A modified Northwestern[18] technique was used and consisted of the following measurements:

1. SNA = The angle formed by a line drawn from the center of sella turcica to nasion to point A of the maxillary median line.
2. SNB = The angle formed by a line drawn from the center of sella turcica to nasion to point B of the mandible.
3. SNA-SNB difference was recorded.
4. Upper central incisor to SN = The angle formed by a line drawn through the pulp canal of the maxillary central incisor to intersect line SN.
5. Lower incisor to MP = The angle formed by a line drawn through the pulp canal of the lower central incisor to the lower border of the mandible as determined by Downs.[19]
6. Upper incisor to NP = A measurement (in millimeters) from the tip of the maxillary central incisor to the nasion-pogonion line (facial plane).
7. Lower incisor to NP = A measurement (in millimeters) from the labial incisal tip of the lower central incisor to the nasion-pogonion line (facial plane).

TABLE I

CASE		PRETREATMENT	POSTTREATMENT
Case 1, Howard C.	SNA	78°	78°
Class II, Division 1	SNB	71°	71°
Active treatment time 21 months	Difference	7°	7°
	1 SN*	110°	90°
	9 MP†	103°	105°
	1 NP‡	18 mm.	11 mm.
	9 NP§	8 mm.	9 mm.
Case 2, Joan D.	SNA	77°	76°
Class II, Division 1	SNB	75°	74°
Active treatment time 25 months	Difference	2°	2°
	1 SN	112°	91°
	9 MP	104°	103°
	1 NP	14 mm.	7 mm.
	9 NP	4 mm.	4 mm.
Case 3, Jeanne D.	SNA	80°	79°
Class II, Division 1	SNB	78°	76°
Active treatment time 23 months	Difference	2°	3°
	1 SN	113°	95°
	9 MP	97°	100°
	1 NP	9 mm.	7 mm.
	9 NP	2 mm.	4 mm.
Case 4, Stephen F.	SNA	84°	83°
Class II, Division 1	SNB	75°	74°
Active treatment time 19 months	Difference	9°	9°
	1 SN	93°	81°
	9 MP	98°	100°
	1 NP	11 mm.	7 mm.
	9 NP	5 mm.	6 mm.
Case 5, Andrew F.	SNA	78°	78°
Class II, Division 1	SNB	73°	73°
Active treatment time 21 months	Difference	5°	5°
	1 SN	102°	97°
	9 MP	91°	98°
	1 NP	11 mm.	9 mm.
	9 NP	5 mm.	7 mm.
Case 6, Adele G.	SNA	80°	79°
Class I	SNB	73°	72°
Active treatment time 21 months	Difference	7°	7°
	1 SN	107°	93°
	9 MP	90°	92°
	1 NP	16 mm.	11 mm.
	9 NP	8 mm.	8 mm.
Case 7, Ronald H.	SNA	83°	83°
Class I	SNB	76°	76°
Active treatment time 19 months	Difference	7°	7°
	1 SN	108°	95°
	9 MP	95°	96°
	1 NP	13 mm.	10 mm.
	9 NP	6 mm.	7 mm.
Case 8, Sheila I.	SNA	84°	81°
Class II, Division 1	SNB	76°	76°
Active treatment time 25 months	Difference	8°	5°
	1 SN	114°	98°
	9 MP	101°	98°
	1 NP	17 mm.	9 mm.
	9 NP	6 mm.	6 mm.

*1 SN = Maxillary central incisor to sella-nasion.
†9 MP = Mandibular central incisor to mandibular plane.
‡1 NP = Maxillary central incisor to nasion-pogonion.
§9 NP = Mandibular central incisor to nasion-pogonion.

(Continued on pages 36 to 39.)

TABLE I—CONT'D

CASE		PRETREATMENT	POSTTREATMENT
Case 9, Everett J.	SNA	82°	81°
Class II, Division 1	SNB	74°	76°
Active treatment time 23 months	Difference	8°	5°
	1 SN	104°	95°
	9 MP	91°	91°
	1 NP	11 mm.	4 mm.
	9 NP	1 mm.	1.5 mm.
Case 10, Jerold J.	SNA	86°	84°
Class II, Division 1	SNB	77°	77°
Active treatment time 25 months	Difference	9°	7°
	1 SN	109°	85°
	9 MP	96°	98°
	1 NP	16 mm.	6 mm.
	9 NP	3 mm.	3 mm.
Case 11, Michael J.	SNA	83°	84°
Class II, Division 1	SNB	75°	77°
Active treatment time 27 months	Difference	8°	7°
	1 SN	108°	102°
	9 MP	100°	101°
	1 NP	15 mm.	11 mm.
	9 NP	7 mm.	9 mm.
Case 12, Robert K.	SNA	83°	83°
Class II, Division 1	SNB	77°	77°
Active treatment time 18 months	Difference	6°	6°
	1 SN	105°	96°
	9 MP	87°	91°
	1 NP	11 mm.	8 mm.
	9 NP	3 mm.	6 mm.
Case 13, Theodore K.	SNA	86°	92°
Class II, Division 1	SNB	76°	81°
Active treatment time 22 months	Difference	10°	11°
	1 SN	114°	99°
	9 MP	103°	112°
	1 NP	19 mm.	13 mm.
	9 NP	9 mm.	11 mm.
Case 14, Susan K.	SNA	78°	76°
Class II, Division 1	SNB	72°	72°
Active treatment time 20 months	Difference	6°	4°
	1 SN	108°	98°
	9 MP	87°	89°
	1 NP	10 mm.	4 mm.
	9 NP	1 mm.	2 mm.
Case 15, Judy K.	SNA	82°	82°
Class II, Division 1	SNB	76°	77°
Active treatment time 18 months	Difference	6°	5°
	1 SN	121°	106°
	9 MP	99°	105°
	1 NP	15 mm.	8 mm.
	9 NP	5 mm.	6 mm.
Case 16, Dale L.	SNA	84°	84°
Class II, Division 1	SNB	80°	80°
Active treatment time 15 months	Difference	4°	4°
	1 SN	117°	106°
	9 MP	110°	111°
	1 NP	11 mm.	7 mm.
	9 NP	5 mm.	5 mm.
Case 17, Anita M.	SNA	81°	80°
Class II, Division 1	SNB	75°	75°
Active treatment time 20 months	Difference	6°	5°
	1 SN	109°	100°
	9 MP	97°	99°
	1 NP	14 mm.	10 mm.
	9 NP	7 mm.	7 mm.

TABLE I—CONT'D

CASE	PRETREATMENT		POSTTREATMENT
Case 18, Janet M.	SNA	73°	72°
Class II, Division 1	SNB	67°	67°
Active treatment time 21 months	Difference	6°	5°
	1 SN	74°	84°
	9 MP	95°	93°
	1 NP	3 mm.	3 mm.
	9 NP	0	1 mm.
Case 19, Daniel M.	SNA	83°	83°
Class II, Division 1	SNB	75°	75°
Active treatment time 28 months	Difference	8°	8°
	1 SN	108°	91°
	9 MP	98°	95°
	1 NP	14 mm.	8 mm.
	9 NP	4 mm.	6 mm.
Case 20, William M.	SNA	86°	86°
Class II, Division 1	SNB	78°	80°
Active treatment time 25 months	Difference	8°	6°
	1 SN	85°	98°
	9 MP	88°	92°
	1 NP	7 mm.	9 mm.
	9 NP	4 mm.	6 mm.
Case 21, Phyllis M.	SNA	83°	83°
Class II, Division 1	SNB	78°	80°
Active treatment time 20 months	Difference	5°	3°
	1 SN	100°	110°
	9 MP	102°	101°
	1 NP	7.5 mm.	7 mm.
	9 NP	4 mm.	4 mm.
Case 22, Warren M.	SNA	88°	88°
Class I	SNB	82°	82°
Active treatment time 17 months	Difference	6°	6°
	1 SN	125°	105°
	9 MP	91°	96°
	1 NP	13 mm.	7 mm.
	9 NP	3 mm.	5 mm.
Case 23, Burton L.	SNA	79°	78°
Class II, Division 2	SNB	73°	73°
Active treatment time 19 months	Difference	6°	5°
	1 SN	90°	95°
	9 MP	96°	97°
	1 NP	6 mm.	4.5 mm.
	9 NP	2 mm.	2 mm.
Case 24, Michael L.	SNA	84°	83°
Class II, Division 1	SNB	76°	77°
Active treatment time 28 months	Difference	8°	6°
	1 SN	115°	106°
	9 MP	105°	110°
	1 NP	15 mm.	9 mm.
	9 NP	3 mm.	6 mm.
Case 25, Charles M.	SNA	87°	87°
Class II, Division 1	SNB	79°	78°
Active treatment time 19 months	Difference	8°	9°
	1 SN	110°	97°
	9 MP	100°	103°
	1 NP	15 mm.	13 mm.
	9 NP	8.5 mm.	10 mm.
Case 26, Lynn R.	SNA	84°	81°
Class II, Division 2	SNB	76°	76°
Active treatment time 20 months	Difference	8°	5°
	1 SN	81°	99°
	9 MP	96°	103°
	1 NP	6 mm.	8 mm.
	9 NP	3 mm.	6 mm.

TABLE I—CONT'D

CASE		PRETREATMENT	POSTTREATMENT
Case 27, Joel S.	SNA	80°	80°
Class II, Division 1	SNB	74°	75°
Active treatment time 16 months	Difference	6°	5°
	1 SN	102°	92°
	9 MP	89°	90°
	1 NP	9 mm.	7 mm.
	9 NP	4 mm.	5 mm.
Case 28, Evelyn S.	SNA	77°	77°
Class II, Division 1	SNB	72°	72°
Active treatment time 22 months	Difference	5°	5°
	1 SN	106°	103°
	9 MP	102°	105°
	1 NP	11 mm.	8.5 mm.
	9 NP	4.5 mm.	6 mm.
Case 29, Eleanor S.	SNA	77°	76°
Class II, Division 1	SNB	69°	69°
Active treatment time 31 months	Difference	8°	7°
	1 SN	101°	92°
	9 MP	91°	96°
	1 NP	16 mm.	11 mm.
	9 NP	4 mm.	7 mm.
Case 30, Barbara S.	SNA	84°	83°
Class II, Division 1	SNB	78°	76°
Active treatment time 25 months	Difference	6°	7°
	1 SN	114°	88°
	9 MP	96°	99°
	1 NP	10 mm.	5.5 mm.
	9 NP	3.5 mm.	4 mm.
Case 31, Robert S.	SNA	82°	82°
Class II, Division 1	SNB	73°	74°
Active treatment time 22 months	Difference	9°	8°
	1 SN	102°	90°
	9 MP	99°	107°
	1 NP	17 mm.	12 mm.
	9 NP	7 mm.	9 mm.
Case 32, Barbara S.	SNA	80°	80°
Class II, Division 1	SNB	74°	73°
Active treatment time 16 months	Difference	6°	7°
	1 SN	96°	90°
	9 MP	97°	99°
	1 NP	11 mm.	9 mm.
	9 NP	6 mm.	7.5 mm.
Case 33, Robert S.	SNA	86°	85°
Class II, Division 1	SNB	78°	77°
Active treatment time 25 months	Difference	8°	8°
	1 SN	115°	96°
	9 MP	101°	109°
	1 NP	14 mm.	9 mm.
	9 NP	6 mm.	7 mm.
Case 34, Arthur S.	SNA	85°	83°
Class II, Division 1	SNB	78°	78°
Active treatment time 26 months	Difference	7°	5°
	1 SN	112°	97°
	9 MP	90°	91°
	1 NP	11 mm.	6 mm.
	9 NP	3 mm.	3 mm.
Case 35, Patricia S.	SNA	86°	87°
Class II, Division 1	SNB	78°	80°
Active treatment time 24 months	Difference	8°	7°
	1 SN	107°	103°
	9 MP	99°	104°
	1 NP	10 mm.	7 mm.
	9 NP	4.5 mm.	4.5 mm.

TABLE I—CONT'D

CASE		PRETREATMENT	POSTTREATMENT
Case 36, Carol S.	SNA	83°	82°
Class II, Division 1	SNB	80°	79°
Active treatment time 24 months	Difference	3°	3°
	1 SN	108°	91°
	9 MP	96°	94°
	1 NP	9 mm.	4 mm.
	9 NP	3 mm.	3 mm.
Case 37, Sheila T.	SNA	84°	83°
Class II, Division 1 subdivision	SNB	79°	80°
Active treatment time 17 months	Difference	5°	3°
	1 SN	97°	100°
	9 MP	90°	91°
	1 NP	3 mm.	2 mm.
	9 NP	−1 mm.	−0.5 mm.
Case 38, Steven T.	SNA	81°	80°
Class I	SNB	74°	73°
Active treatment time 21 months	Difference	7°	7°
	1 SN	110°	90°
	9 MP	105°	105°
	1 NP	19 mm.	10 mm.
	9 NP	9 mm.	9 mm.
Case 39, Michael W.	SNA	87°	85°
Class II, Division 1	SNB	78°	78°
Active treatment time 19 months	Difference	9°	7°
	1 SN	102°	101°
	9 MP	99°	103°
	1 NP	15 mm.	16 mm.
	9 NP	11 mm.	14 mm.
Case 40, Barry Y.	SNA	85°	85°
Class II, Division 1	SNB	78°	80°
Active treatment time 17 months	Difference	7°	5°
	1 SN	116°	103°
	9 MP	92°	94°
	1 NP	14 mm.	10 mm.
	9 NP	6 mm.	7 mm.

These seven measurements were recorded for each case to permit evaluation, within cephalometric accuracy, of what tooth movement had occurred as a result of treatment. Inasmuch as this study is mainly concerned with the stability or movement of mandibular teeth after the use of intermaxillary elastics, only the following measurements will be studied in detail:

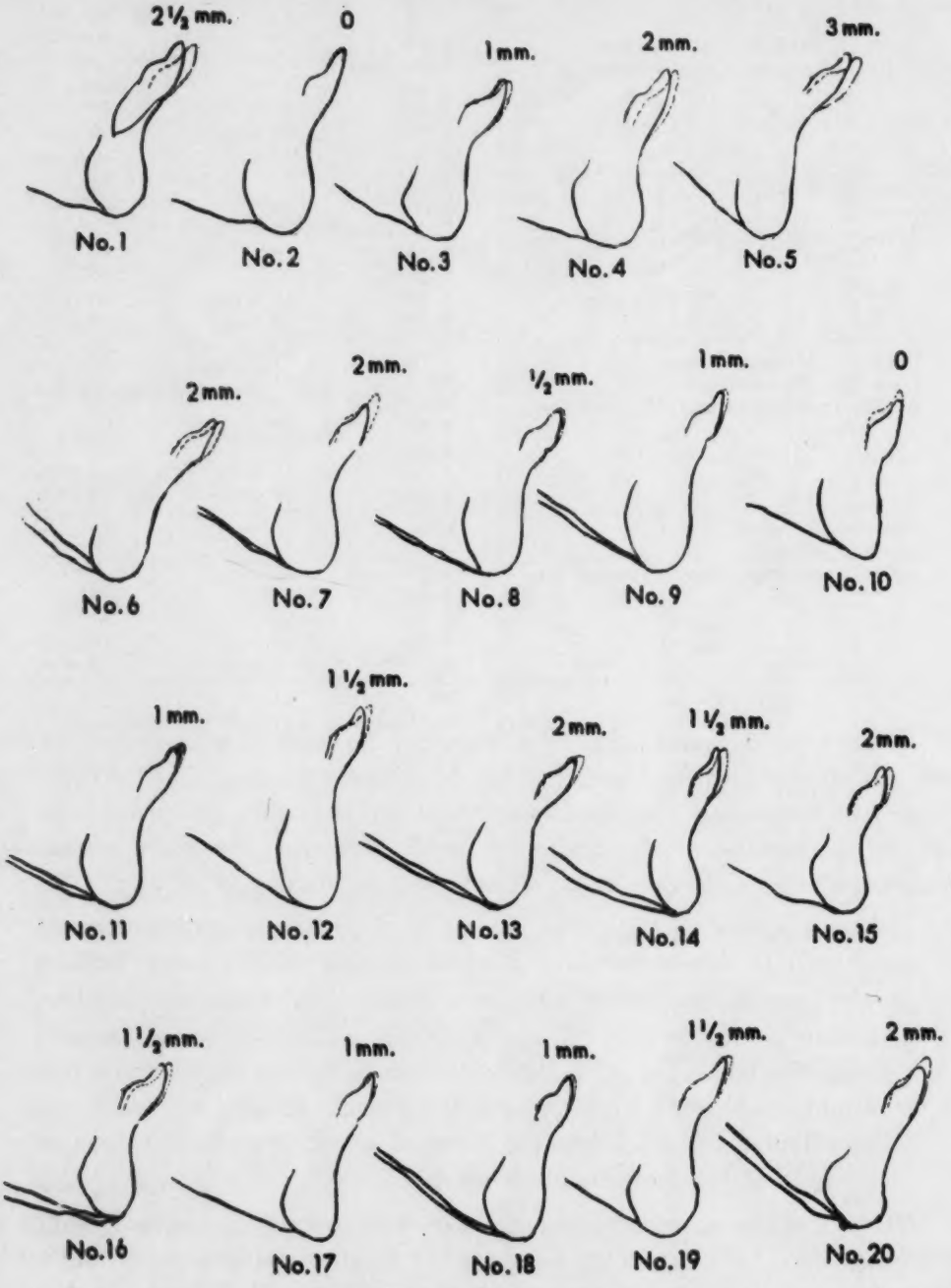
1. Lower incisor to MP. The change in the incisal mandibular angle is used to determine the extent of tipping of the lower incisors which might have taken place as a result of intermaxillary elastics.
2. Lower incisor to NP. The change (in millimeter measurements) from the labial tip of the lower incisor to the nasion-pogonion line would enable one to determine the extent, if any, to which the mandibular teeth have moved forward on the mandibular base as a result of the intermaxillary elastics.

Table I shows a recording of the pre- and postcephalometric findings of each case. Also included in the table are the Angle classification and the active treatment time. The active treatment time was recorded from the time of

insertion of the appliances to the placing of the retainer. Intermaxillary elastics were customarily worn continuously, day and night, for at least three-fourths of the active treatment time in each case.

Table II shows tracings which were performed on each case by superimposing mandible on mandible, using the pogonion and the lower border of the

TABLE II *A*. SUPERIMPOSITION TRACINGS OF MANDIBLE ON MANDIBLE



(Table II B on following page.)

mandible as the fixed points. According to Brodie and associates,[3] Litowitz,[20] Downs,[19] and Graber,[10] this is the desirable procedure for determining movement of the mandibular anterior teeth as a result of orthodontic treatment.

CLINICAL STUDY

As discussed previously, a cephalometric analysis was performed in each case to determine whether the lower incisors had been tipped or moved forward

TABLE II *B*. SUPERIMPOSITION TRACINGS OF MANDIBLE ON MANDIBLE

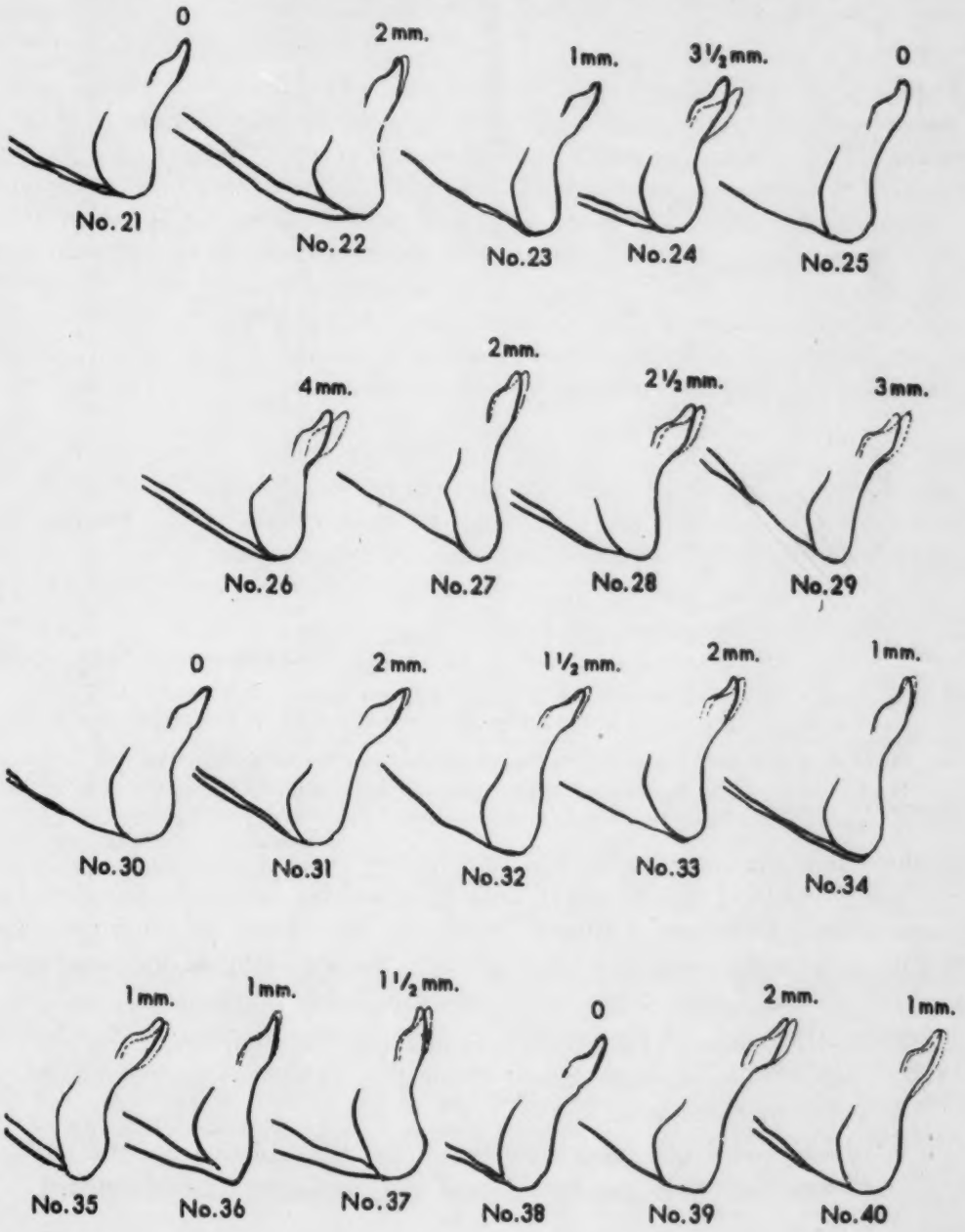


TABLE III. MANDIBULAR MODEL MEASUREMENTS

CASE NO.	PRETREATMENT		POSTTREATMENT	
	M OF $\overline{6}$ TO D OF $\overline{3}$* (MM.)	I OF $\overline{3}$ TO I OF $\overline{3}$† (MM.)	M OF $\overline{6}$ TO D OF $\overline{3}$ (MM.)	I OF $\overline{3}$ TO I OF $\overline{3}$ (MM.)
1	16	29.5	16	30
2	16	29	14	29
3	16	25	15	25
4	15.5	23	14.5	23.5
5	14.5	26	14	25
6	13	24	13	24
7	24	27	21	27
8	18	25	14.5	26
9	15	30	15	30
10	15	28	15	27
11	15	29	16	29
12	14	25	15	28
13	15	27.5	15	27.5
14	14	25.5	14	25.5
15	12.5	24	13	26
16	15	29	15.5	31
17	14.5	24	14	25
18	13	25	13	25
19	12	30	15	28.5
20	15	24	15	24
21	17	27	15	28
22	16	26	15	26
23	13	27	13	26
24	15	25	15	25.5
25	17	28	15	28
26	13.5	26	14.5	25
27	14	25	14	25
28	13.5	24.5	13.5	25
29	12.5	26	14	26
30	14.5	25	14	25
31	15	25	13.5	25
32	14	25	14	25
33	15	28	15	28
34	14	23	14.5	25
35	16	27	15	28
36	16	23	14	23.5
37	14.5	26	13.5	25.5
38	17	25	15	24.5
39	15	24.5	15	26
40	18	27.5	18	28

*M of $\overline{6}$ to D of $\overline{3}$ = Mesial surface of mandibular first molar to distal surface of cuspid.

†I of $\overline{3}$ to I of $\overline{3}$ = Intercuspid width measured from midpoint of incisal edge of each mandibular cuspid.

on the mandibular base. However, this did not make it possible to determine whether slippage in the premolar area or expansion in the cuspid area had taken place. Therefore, a clinical study was undertaken to determine these factors, and the following measurements were made directly on the mandibular models before and after treatment, as shown in Table III:

1. Mesial surface of the left six-year molar to distal surface of the left cuspid to determine the extent of buckling which may have occurred in the premolar area.
2. Intercuspid width taken from the incisal tip of each cuspid to determine the extent of expansion that may have occurred in the cuspid area.

APPLIANCE THERAPY

A brief description of the types of appliances used in the cases included in this study is presented below:

1. *Maxillary Arch.*—Two distinct types of appliances were used, namely, the Johnson twin-arch appliance and a modified round-wire edgewise appliance with sliding yokes. Usually the Johnson[14] appliance was used to condense anterior teeth where spaces occurred and the sliding yokes were utilized for distal movement of posterior segments. By using sliding yokes, distal movement of individual teeth is attempted instead of distal movement of groups of teeth.

2. *Mandibular Arch.*—The Ellis prefabricated lingual arch has been used in all the cases presented in this study. A direct molar band technique is used. The arch must be adapted as low down on the lingual surfaces of the lower anterior teeth as the tissues will tolerate. At each visit the appliance is tested for firmness of contact by lifting it with a scaler. The arch should readily snap back into position when released. At each visit the appliance is removed and a very mild tipback bend is inserted mesial to the post. With this procedure, it is possible to attain a distal tilt of the six-year molars even with the use of intermaxillary elastics. Because of the difficulty of adjustment, I never use the fixed lingual arch when intermaxillary elastics are employed.

CASE REPORTS

Five cases have been selected from the study and are presented with photographs of the pretreatment and posttreatment models and a discussion of the cephalometric findings and model measurements. Case numbers correspond with the cases listed in Table I.

CASE 2.—A Class II, Division 1 malocclusion with an SNAB difference of 2 degrees throughout treatment was successfully treated in twenty-five months (Fig. 1).

The angulation of the lower incisors to MP did not change during treatment, while the maxillary anterior teeth in relation to SN were tipping lingually 21 degrees.

The mandibular incisors remained constant in reference to the NP line, while the maxillary incisors were retracted 7 mm.

The superimposition tracings of the mandible showed no appreciable change in the position of the lower incisors.

The clinical study revealed no expansion in the lower cuspid area. Due to the presence of the second deciduous molar at the outset of treatment, the molar-to-cuspid measurement decreased 2 mm.

CASE 4.—This case involved a Class II, Division 1 malocclusion with an SNAB difference of 9 degrees throughout treatment and a definite vertical positioning of the maxillary anterior teeth, 93 degrees in relation to SN. Active treatment time was nineteen months.

The angulation of the lower anterior teeth to MP increased 2 degrees as a result of treatment. The maxillary anterior teeth were tipped lingually 12 degrees in relation to SN.

The mandibular central incisors moved forward 1 mm. in relation to NP, while the maxillary anterior teeth were retracted 4 mm.

The superimposition tracings of the mandible revealed a 2 mm. forward movement of the lower incisors.

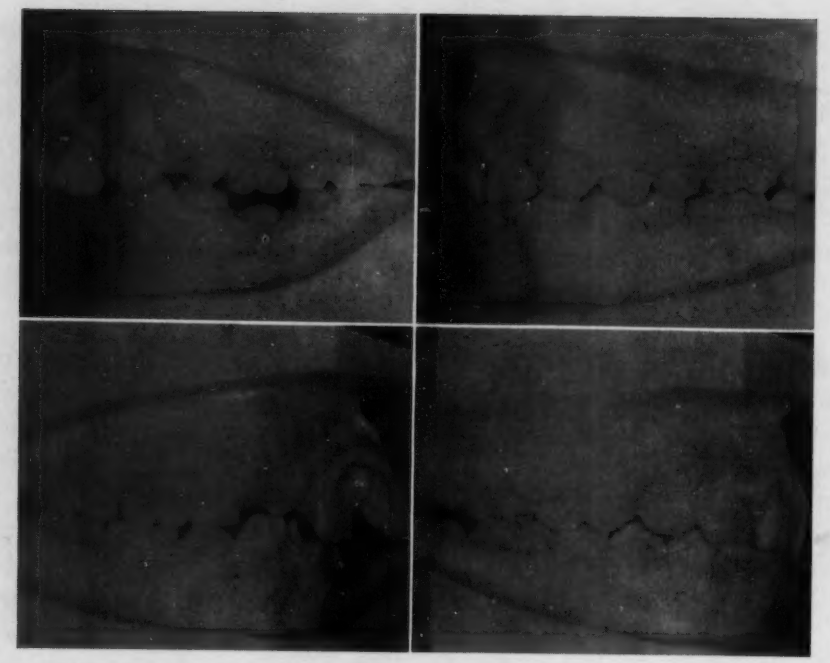


Fig. 1.—Case 2.

Fig. 2.—Case 4.

The clinical study revealed no appreciable expansion in the mandibular cuspid area. The molar-to-cuspid measurement decreased due to spacing which existed distal to the cuspids at the outset of treatment.

CASE 9.—In this Class II, Division 1 malocclusion there was an anterior open-bite as well as an SNAB difference of 8 degrees at the outset of treatment and 5 degrees at termination of treatment.

The angulation of the lower anterior teeth to MP did not change as a result of twenty-three months of treatment. The maxillary anterior teeth were tipped lingually 9 degrees in relation to SN.

The mandibular incisors did not change appreciably in relation to NP, while the maxillary anterior teeth were retracted 7 mm.

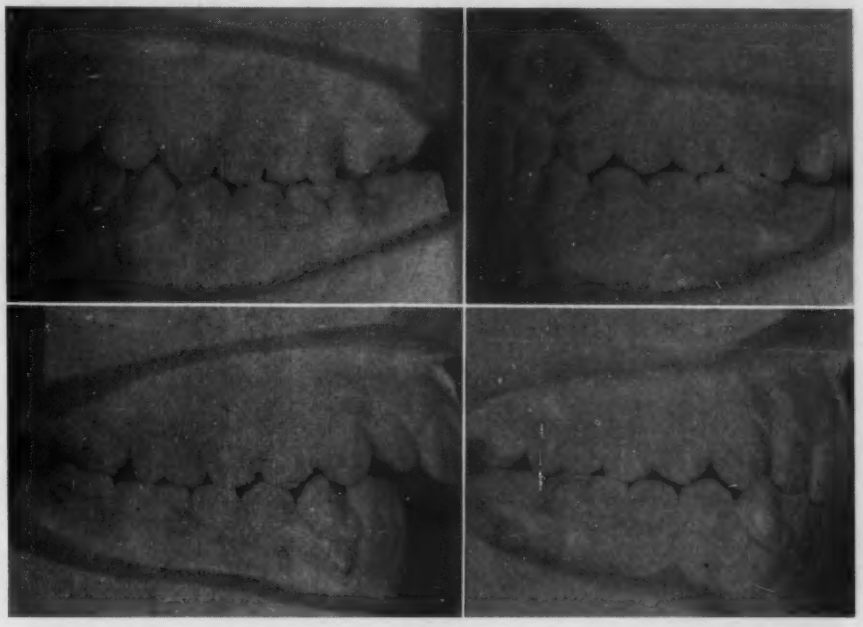


Fig. 3.—Case 9.

The superimposition tracings of the mandible revealed a 1 mm. forward movement of the lower anterior teeth.

The clinical study revealed no change in the pre- and posttreatment mandibular models.

The 3-degree decrease in the SNAB difference as a result of treatment would suggest a forward positioning of the mandible which might have been locked distally by a contraction in the maxillary cuspid area. Actually, the SNB value increased 2 degrees.

CASE 10.—This case presented a Class II, Division 1 malocclusion with an SNAB difference of 9 degrees at the outset of treatment and 7 degrees at the termination of treatment.

The angulation of the lower anterior teeth to MP increased 2 degrees as a result of twenty-five months of active treatment. The maxillary anterior teeth were tipped lingually 24 degrees in relation to SN.

The mandibular incisors in relation to NP remained unaltered, while the maxillary central incisors were retracted 10 mm.

The superimposition tracings of the mandible showed no change of the lower anterior teeth.

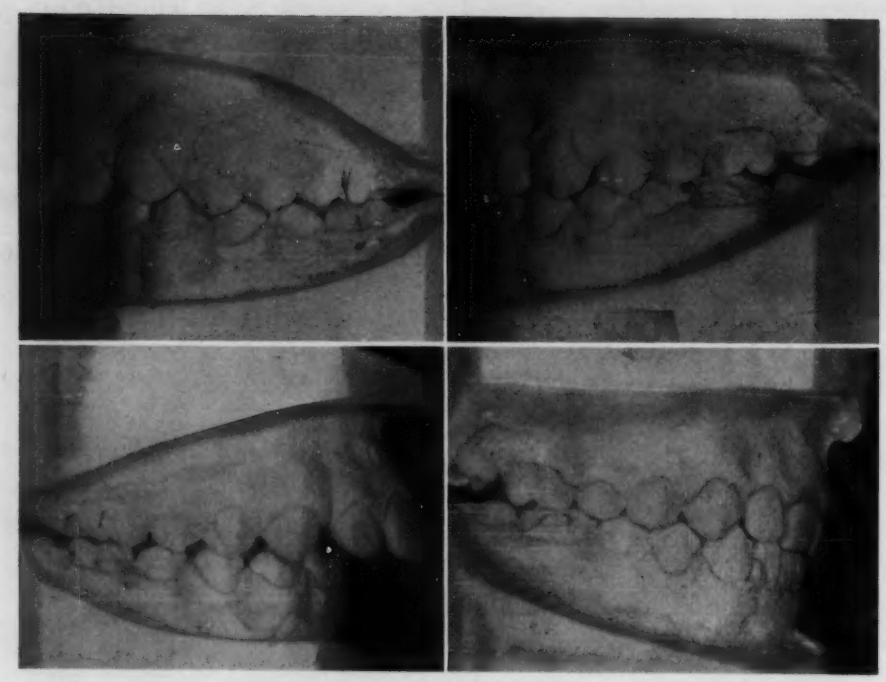


Fig. 4.—Case 10.

Fig. 5.—Case 36.

The clinical study, as well, revealed no change in the pretreatment and posttreatment models.

CASE 36.—In this case there was a Class II, Division 1 malocclusion with a very favorable SNAB difference of 3 degrees throughout treatment.

The angulation of the lower anterior teeth actually decreased 2 degrees as a result of twenty-four months of active treatment. The maxillary central incisors were tipped lingually 17 degrees in relation to SN.

The mandibular lower anterior teeth actually moved lingually 1 mm. in relation to NP, while the maxillary central incisors were retracted 5 mm.

The superimposition tracing of the mandible showed no appreciable change in position of the lower anterior teeth.

The clinical study revealed a decrease in the molar-to-cuspid measurement due to the presence of the second deciduous molar at the outset of treatment.

SUMMARY

A cephalometric and clinical appraisal of forty treated Class II (Angle) malocclusion cases selected from my private practice has been presented. In all of these cases the maxillomandibular relationship was corrected by the use of intermaxillary elastics, using the mandibular removable lingual arch as the source of anchorage. No extractions were performed and headcaps were not used either directly to the maxillary arch or in reinforcement of the mandibular anchorage.

The following methods were employed to determine tooth movement that may have occurred in the mandibular arch as a result of the use of intermaxillary elastics:

1. The angulation of the lower incisors to the lower border of the mandible was recorded on the pretreatment and posttreatment cephalometric roentgenograms to determine the extent of tipping that may have resulted.
2. The measurement (in millimeters) of the labial incisal tip of the lower incisors to the nasion-pogonion reference line was recorded on the pre- and postcephalometric roentgenograms to determine the extent of forward movement of the incisors on the mandibular base.
3. Tracings of the pretreatment and posttreatment cephalometric roentgenograms were made in each case by superimposing mandible on mandible, using pogonion and the lower border of the mandible as the fixed areas. The extent of forward movement of the mandibular incisors was measured in millimeters.
4. A clinical study was also performed on the pre- and posttreatment mandibular models to measure expansion of the intercuspid width and changes in arch length of the premolar area.

CONCLUSIONS

1. The average increase experienced in the angulation of the mandibular incisors to the lower border of the mandible in the forty treated cases was

TABLE IV. SUMMARY OF CEPHALOMETRIC AND CLINICAL CHANGES

CASE NO.	INCREASE OF $\bar{1}$-MP* (DEGREES)	INCREASE OF $\bar{1}$-NP† (MM.)	INCREASE OF $\bar{1}$ ON SUPERIMPOSITION TRACINGS‡ (MM.)	INCREASE OF INTERCUSPID WIDTH (MM.)
1	2	1	2.5	0.5
2	–1	0	0	0
3	3	2	1	0
4	2	1	2	0.5
5	7	2	3	–1
6	2	0	2	0
7	1	1	2	0
8	–3	0	0.5	1
9	0	0.5	1	0
10	2	0	0	–1
11	1	2	1	0
12	4	3	1.5	3
13	9	2	2	0
14	2	1	1.5	0
15	6	1	2	2
16	1	0	1.5	2
17	2	0	1	1
18	–2	1	1	0
19	–3	2	1.5	–1.5
20	4	2	2	0
21	–1	0	0	1
22	5	2	2	0
23	1	0	1	–1
24	5	3	0	0.5
25	3	1.5	0	0
26	7	3	4	–1
27	1	1	2	0
28	3	1.5	2.5	0.5
29	5	3	3	0
30	3	0.5	0	0
31	8	2	2	0
32	2	1.5	1.5	0
33	8	1	2	0
34	1	0	1	2
35	5	0	1	1
36	–2	0	1	0.5
37	1	–0.5	1.5	–0.5
38	0	0	0	–0.5
39	4	3	2	1.5
40	2	1	1	0.5

*Increase of $\bar{1}$ – MP = Increase in angulation of mandibular incisors in relation to mandibular plane.

†Increase of $\bar{1}$ – NP = Forward movement of mandibular incisors to nasion-pogonion line.

‡Increase of $\bar{1}$ on superimposition tracings = Forward movement of mandibular incisors measured in millimeters when determined by superimposing mandible on mandible.

2.5 degrees. The range extended from a decrease in angulation of 3 degrees to an increase of 9 degrees. In twenty-seven of the cases, an increase in angulation of the mandibular incisors of 3 degrees or less resulted.

2. The average forward movement of the mandibular incisors in relation to the nasion-pogonion reference line was 1.15 mm. The range extended from no changes to an increase of 3 mm. Twelve cases showed no forward movement of the incisors, an additional twelve cases showed a forward movement of 1 mm. or less, and eleven cases showed a forward movement of 2 mm. or less. In five cases a procumbency of the mandibular incisors of 3 mm. resulted.

3. The average forward movement of the mandibular incisors, when measured by superimposing mandible on mandible, was 1.5 mm. The range extended from no changes to an increase of 4 mm. Seven cases showed no forwerd movement of the mandibular incisors, eleven cases showed a forward movement of 1 mm., and in thirteen cases the mandibular incisors were 1.5 to 2 mm. more procumbent. Eight cases showed a forward movement of 2.5 to 3 mm., and in one case an increase of 4 mm. resulted.

4. The average expansion occurring in the intercuspid width of the mandible was 0.3 mm. In thirty-five of the forty cases, expansion of 1 mm. or less in the intercuspid width resulted. The changes in the arch length of the premolar area showed no significant trend due to the presence of second deciduous molars at the outset of treatment in many of the cases.

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DISCUSSION OF "THE LOWER INCISOR—ITS INFLUENCE ON TREATMENT AND ESTHETICS"

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FOREWORD: The paper by Dr. John T. Lindquist, entitled "The Lower Incisor—Its Influence on Treatment and Esthetics," was read before the American Association of Orthodontists in New York on April 29, 1958. This paper was part of a discussion symposium, the purpose of which was to bring together the opinions of scientists and clinical orthodontists on a current controversial subject in orthodontics. Dr. Lindquist's paper was published in advance, in the February, 1958, issue of the AMERICAN JOURNAL OF ORTHODONTICS. The following discussion by Dr. Wendell L. Wylie was read as one of several. Other discussions of Dr. Lindquist's paper will be published at a later date if they are made available to the JOURNAL for publication.

—*Editor.*

SURELY Dr. Lindquist must be a bit amazed by all this. Something over a year ago he wrote a thesis in the belief that it would be read by seven middle-aged orthodontists. These men might later question him privately about his ideas, but that would be the end of it. Now he finds that his manuscript has been published in a journal with world-wide circulation, under an invitation for one and all to come to New York where he would face three inquisitors. If Dr. Lindquist were anyone else, I would feel sorry for him. As it is, I am saving my sympathy for someone less generously endowed.

Surely everyone will agree that, considering what Dr. Lindquist sets out to do, he does it very well. There will be those who say that it should never have been done in the first place. But even those who have no desire to emulate him will have to concede, I think, that Dr. Lindquist has mastered the orthodontic concepts which he espouses. As one who seeks a specific type of facial change in orthodontic therapy, he pictures his objectives clearly and then achieves them through the exercise of great technical skill. He closes his extraction spaces completely. In doing so, he parallels the roots of teeth proximal to the former space. The roots of anterior teeth are retracted, as well as their crowns, so that natural axial inclinations are not sacrificed to profile change. If all advocates of the straight profile treated their patients as Dr. Lindquist does his, many extraneous factors in what promises to be a perpetual debate might be eliminated.

The paper deserved commendation not only for technical skill displayed in the treatment of cases but also for the tone of the discussion. Several of the cephalometric measurements currently used for the evaluation of the facial

profile are presented for each of the eight cases discussed, but Dr. Lindquist does not insist that any one be adopted to the exclusion of others. Yet, he is not so noncommittal that he appears to be without convictions. The angulation of the lower incisor, for nearly as long as the facial profile has preoccupied orthodontists, has been a criterion by which many were content to judge facial balance and on which many would plan treatment. Dr. Lindquist forthrightly shows how this angle by itself does not give sufficient information and how it can actually be misleading. He has shown convincingly that, since the angle of the tooth could be altered by moving either the crown or the apex, we need more than an angle to tell us whether or not the change is desirable. Equally well he makes the point that the tooth must be related to the chin if its effect on the profile is to be evaluated.

Dr. Lindquist undoubtedly has the same concern for axial inclination of maxillary teeth. He did not dwell on this, however, since his paper was limited to the significance of the lower incisors. Still his final tracings demonstrate proper positioning of the maxillary incisor, which leads not only to a better esthetic result but, in all probability, to fewer relapses where it is necessary to open the bite.

Dr. Lindquist has written his paper with care, which makes it pleasant to read but somewhat difficult to discuss. A few glaring *non sequiturs* upon which one might pounce would have made the preparation of this discussion an easier task.

As it is, to take exception to the paper, one must either limit himself to a few passing remarks which Dr. Lindquist makes about mandibular growth or read into the paper aspects which are not actually there. The latter course would be to treat the paper as a frank espousal of a particular kind of facial change and a denunciation of those orthodontists who do not routinely seek that change. Instead, the author says at the outset that here are eight cases in which desirable changes have been achieved and proceeds to a discussion within that frame of reference. I happen to agree that desirable facial changes have been achieved in each of these cases, with the possible exception of one. Dr. Lindquist, too, seems to have some doubts about Case 4, and so I am not going to belabor him with my reservations concerning it. Those reservations have to do not so much with the face as it stands at the age of 15 years and 2 months as with what I expect to happen to that face in a few more years. The patient is a male, and experience has taught me that faces of males that look like this at 15 years and 2 months frequently show later an exaggeration of the undesirable aspects.

A number of readers have undoubtedly taken exception to Dr. Lindquist's remarks concerning the effect of orthodontic treatment upon facial growth. More than once he has revealed his assumption that there have occurred mandibular growth changes which would not have occurred without his first establishing a certain mandibular incisor position. On this point I think that we have to bring in the verdict of the Scottish courts: "Not proven." On the other hand, I cannot understand the vehemence with which some say that this is impossible. Twenty years ago it was almost universally believed by orthodontists that their ministrations affected mandibular growth for the better and that these effects

went far beyond teeth and alveolar process. Today this is viewed in many quarters as an outright impossibility. To my mind, there is not yet enough evidence at hand to support a definitive conclusion one way or the other. With those who say that the orthodontist is only an innocent bystander, I will agree that substantial amounts of mandibular growth occur in the teen years, with or without orthodontic treatment and with or without anchorage preparation. On the other hand, those who assign the orthodontist a more ambitious role can furnish examples of mandibular growth responses which must be looked upon as remarkable coincidences if, in fact, treatment were not partially responsible for them. (The truth of the matter is that so many things go into treatment of an orthodontic patient that when these things are taken together and added to the natural phenomenon of growth, one has almost too many variables to evaluate intelligently.)

Dr. Lindquist chose to limit his paper to a consideration of the mandibular incisor and, therefore, properly did not discuss other factors. He did, however, allude to the phenomenon of mandibular growth, relating it to the lower incisor. There are other orthodontists whose views parallel his who would use these same cases to dwell upon the fact that the mandibular plane has remained virtually constant in the treatment of those patients. It is more typical during active treatment to have the anterior portion of the mandible descend more rapidly than the posterior part, so that the mandibular plane becomes steeper.

Maintenance of the same mandibular plane, as opposed to tipping it, is undoubtedly a good thing. The observers to whom I have referred give the credit to the use of Class III elastics. They do not make it clear to me just how Class III elastics get through to the growth sites, but nonetheless they do claim for them a beneficial role in facial growth.

To extract much more from this paper would involve, as I said before, reading into it aspects which are not actually there. This would mean my taking one side or the other in a debate which could be entitled "Resolved, Dr. Lindquist Has No Business Liking the Faces He Does." This I have no intention of doing, for Dr. Lindquist is entitled to like any kind of face he pleases, provided that no one gets hurt in the process. Orthodontists have tried for twenty years to make a scientific proposition out of what can be only a matter of personal taste. It is no more possible to prove scientifically the esthetic ascendancy of one profile over another than it is to prove that the paintings hanging in the Metropolitan Museum are better than those hanging in the Museum of Modern Art. Let me pursue the analogy one step further by remarking that there is little likelihood that an art lover would purchase a Jackson Pollock, thinking all along that he had bought a Gainsborough. Yet it is possible that a layman, knowing no more than he does about orthodontic objectives, could unwittingly get that far afield in purchasing orthodontic services.

The orthodontist should have a number of objectives, each of them envisaged not merely in the instant of time which constitutes the end of active

treatment but on beyond into the period when the natural forces of function and development take over. These objectives consist of the following: (1) the establishment of the best possible functioning unit, considering not merely teeth but also the supporting tissues, muscles, and structures of the joint; (2) the establishment of the best possible outlook for health and longevity of these tissues; and (3) the attainment of the best possible esthetic result, dental and facial, as judged not only in repose but in animation. There is nothing to be gained by attempting to set an order of priority for these three, since often they may be achieved simultaneously. They have been enumerated before and are mentioned again only because I question the orthodontist's privilege of being the sole judge.

Certainly, his education and experience qualify him with respect to factors affecting function and health of the tissues. But what about the layman's opinion of the human profile? I think that it is every bit as good as the orthodontist's, and perhaps better since it is not conditioned by propaganda. Certainly, it is more relevant, for the parents are going to go on living with the child whereas the orthodontist ought to be prepared to be a little more flexible in his opinion. Nevertheless, it is very likely that many orthodontists today are planning treatment primarily based around a concept of facial change, with the parent all the while assuming that teeth were extracted not because the orthodontist is enamored of the straight profile but because considerations of function and health demand it. If the real basis for the extractions were understood, would the extractions have been sanctioned? This example is a harsh one, for there are grounds for the extraction of teeth besides alteration of profile, and these others are but poorly understood, if at all, by laymen. Yet, the occasion does arise, and when facial esthetics can be set forth as a consideration in itself, the orthodontist has the obligation to share the discussion with the parent on an open basis.

The reduction of a convex profile in some patients is sufficiently important to me that I earnestly recommend it to their parents; of course, this means that I am prepared sometimes to remove four permanent teeth to attain the objective. I must report that the parents do not all topple before my irresistible logic; some of them prefer to look at their child with something besides a pair of static photographs, frontal and lateral. Many of them say, "We like her the way she is" or "He gets that from his father's side." When I am overruled on this score, I do not feel the resentment that some orthodontists say I should. Quite the contrary, for in the matter of esthetics I do not claim superior judgment over a layman—as I most emphatically do in matters of health.

Yet, I suspect that today a number of orthodontists are so convinced of the importance of facial change that they present to their clientele recommendations which confuse esthetics with health, and the customer does not fully understand what he is about to pay for. The patient who goes to a plastic surgeon for a rhinoplasty has a fairly good idea of what he is likely to get; he has no illusions about enhancing his sense of smell or his capacity to

breathe. Matters are not so clear-cut in orthodontics, and the esthetic preferences of the orthodontist should be frankly presented as such and not put on a par with physiologic considerations which the parent cannot adequately judge.

A number of orthodontists today are so preoccupied with facial change that they sometimes seem to regard this as the main objective of orthodontic treatment. At the present time this is a minority group, but it is a steadily increasing minority. Those who think that this trend should be reversed have some formidable adversaries. In the ranks of this minority are some exceptionally able technicians, which partially explains the attraction for young orthodontists. Like all minorities who would become the majority, these orthodontists proselyte—with study clubs, short courses, and efforts to assist young men. Because I cannot bring myself to accept the dogma of facial change to the extent urged in some quarters, I am disturbed by some of the efforts made to prove them wrong. The young men with whom I am so obviously concerned will not accept mere scorn as a counter attack, and they sooner or later recognize irrelevant issues. There is no use pretending that extraction can be eliminated as an adjunct to orthodontic treatment, once these upstarts have been given their comeuppance. Not only is extraction permanently with us for other reasons, but, moreover, the advocates of facial change achieve it in nonextraction cases. The canard that they produce more root resorption and alveolar crest damage should be either abandoned or documented; my snooping indicates that this is wishful thinking on the part of those who are prepared to believe anything at all about the profile straighteners, as long as it is bad. The "nay" sayers must certainly avoid the presumption that all those in the opposite camp think alike and that the utterances of one can be turned against all. To a very real extent, the notion that there is an opposite camp is an artificial one, for there are all shades of opinion, and there is almost as much head shaking within the so-called "group" as there is outside.

Therefore, I apologize for using Dr. Lindquist's paper as a springboard for some comments which were not prompted by its context. The editorializing that I have done seems necessary to any discussion which even obliquely touches upon facial esthetics as appraised by orthodontists. I was pleased when my fellow directors of the American Board of Orthodontics chose to bring this paper to the attention of your Program Chairman, and I was flattered when he asked me to discuss it. When Dr. Lindquist read what was perhaps his first orthodontic paper, I was at French Lick to hear it. At that time I made the mental note that here was an orthodontist who would bear watching. And with this smug allusion to my infallible judgment, I bring my remarks to a close.

Editorial

THE MICHIGAN WORKSHOP IN ORTHODONTICS

THE purpose of the Michigan Workshop was to evaluate and study the field of orthodontics, to appraise its development, assess its position today, and plan its role in the future. Included among the questions discussed by the Workshop were (1) the role of orthodontics in the undergraduate curriculum, (2) graduate and preceptorship training, (3) the general practitioner in the treatment of malocclusion, (4) problems in orthodontic research, (5) wider distribution of orthodontic service, (6) relation to other health services, and (7) goals and standards in orthodontic therapy and practice management.

The participants, consultants, reporters, and moderators included orthodontists, general practitioners of dentistry, pedodontists, educators, public health workers, researchers, and others. Many of those in attendance hold well-known opinions with regard to orthodontics as well as on their own chosen fields in relation to orthodontics. Whether the interchange of thought during the discussions at the Workshop changed any of their long-held concepts and opinions is problematical. Although full agreement was achieved on some questions, the divergence of thought as far as other areas are concerned, at least to this observer, remains as complex as ever. One thing is certain: Whatever problems exist are now better recognized and, if not resolved, they were certainly helped toward a better understanding, which is a prerequisite to solution.

Under the sponsorship of the W. K. Kellogg Foundation, with the assistance of the American Association of Orthodontists, the Great Lakes Society of Orthodontists, and the Department of Orthodontics at the Universiy of Michigan, the Workshop was held at Ann Arbor, Michigan, June 16 through 21, 1958. The complete transactions of the Workshop are in the process of publication and will be made available at a later date for wide distribution.

The Workshop was comprised of seven study groups. Group I dealt with undergraduate education in orthodontics. After considerable discussion, the group agreed that the undergraduate in dentistry should be taught to anticipate, detect, prevent, and intercept malocclusion. Students should be taught also how basic orthodontic knowledge can be helpful in other phases of dental practice. Orthodontics, it was agreed, should receive equal consideration with other branches in the dental curriculum. Laboratory and clinical instruction should be within the scope of the objectives stated in detail in the Workshop's *Transactions.*

One of the questions assumed that orthodontics has great appeal to many practicing dentists but is not really a popular subject among undergraduates. The assumption was questioned by the group. However, it was felt that if such

a situation does exist, it is attributable primarily to the relative lack of importance of orthodontics in the dental curriculum, to absence of correlation to other branches of dentistry, and, above all, to lack of clinical participation on the part of students.

We feel that the question is far from hypothetical. The undergraduate student feels that his instruction in orthodontics at present is too diffuse and does not prepare him for clinical practice in this field. Courses which do not aim at manipulation of patients are still considered "excess baggage" in many quarters.

Undergraduate orthodontics requires not so much modification as complete rebuilding from the ground up, especially in relation to other branches of dentistry. Dentistry is concerned primarily with dental occlusion, whether in its dynamic developmental stage or in the restorative phase as found in the adult. The orthodontic approach to dental practice as such will create not only greater interest in orthodontics but will provide the dentist with a new vantage point from which he will be able to view the practice of dentistry in an entirely new light with greater benefit to his patients.

The question as to whether the specialist in orthodontics should receive his education through graduate or postgraduate courses under university auspices, by means of controlled preceptorship training, or both, as presently advocated by the American Association of Orthodontists, was the concern of Group II. This question aroused extended and at times highly argumentative discussion which continued until the last day of the Workshop.

As spelled out by the Committee on Admissions of the American Association of Orthodontists, and in view of the detailed rules and regulations already published by some of its component societies, we feel that anyone undertaking to act as a preceptor would have to devote a large portion of his time to the training program.

Variations in preceptorship training requirements among the components of the A. A. O. and the wide differences of opinion on this question among the A. A. O. membership present a problem of pressing importance.

Even with the recent additions in dental educational facilities, dentistry is steadily falling behind population increases. Until the dental schools can find it possible to turn out annually an increasing number of dentists and orthodontic specialists, preceptorship constitutes an important method in the training of orthodontists.

The question of how specialists are to be trained does not stand alone but is intimately tied to undergraduate orthodontic training and to the important problem of the role of the general practitioner with respect to orthodontics. This question was the assignment of Group III of the Workshop. The group presented little that was not already contained in the report of the Committee of the American Academy of Pedodontics* which was discussed editorially in a previous issue of the JOURNAL.†

*Brown, N. E., et al.: How Much Orthodontics Shall the Pedodontist Do? J. Dent. Children 25: 3-8, 1958.

†Salzmann, J. A.: Editorial: An Answer to "How Much Orthodontics Shall the Pedodontist Do?" AM J. ORTHODONTICS 44: 630-632, 1958.

It would be foolhardy for orthodontists to take the stand, and we know of none who do so, that the practice of orthodontics is the sole domain of the specialist, any more than the oral surgeon can allocate to himself the sole right to practice oral surgery. We are in full sympathy with the oral surgeon, however, who feels that the "assault and battery" practiced by an inadequately trained operator on an unsuspecting victim is not oral surgery. Competence in any field of dentistry, not necessarily specialization, is the prime criterion for practice. In this we believe that we are in full agreement with the American Academy of Pedodontics.

Furthermore, statements to the effect that acquiescence on the part of orthodontists to certain orthodontic practices by the general practitioners would "free the orthodontic profession* from the accusatory cliche of practicing a 'holier-than-thou' branch of dentistry" belong in the "when-did-you-stop-beating-your-wife" category. We are not aware of any orthodontists who maintain a "holier-than-thou" attitude, and if it exists at all it is certainly not representative of the opinion held by the average orthodontist as we know him.

Training of general dentists with the help of orthodontic specialists under dental society auspices, as advocated by Group III, is a laudible aim, but it is beset by many difficulties. As one who has had experience in presenting orthodontic seminars to general practitioners under dental society auspices, I can assure the group that the general dentist is frequently most interested in practicing general orthodontics without resorting to university or preceptorship training. As a rule, the general practitioner is not content with learning simpler or preventive treatment alone.

The problem of educating the general practitioner in orthodontic procedures that come within his scope lies not in inducing orthodontic specialists to agree to this proposal—it can be done, whether they agree or not—but is the responsibility of those who establish dental curricula. It is up to them to include sufficient time and material for teaching undergraduates this branch of dentistry.

Several noteworthy recommendations were made by Group IV on research. The group would encourage research on the clinical level, either by individuals or by groups. Regional committees of experienced research workers were advocated to give advice and guidance to clinical researchers. A full report of the transactions of Group IV will be sent to the Research Committee of the American Association of Orthodontists for implementation of their recommendations. Group IV is planning to continue its deliberations at another conference which now is in the planning stage.

Group V, which dealt with the problem of meeting the demand for orthodontic service, included men with wide experience in the public health field. Available statistical evidence shows that orthodontists are unevenly and inequitably distributed with regard to states, population centers, and population

*Orthodontists refer to it as a specialty.

income. Nationwide information as to how well the active demand for orthodontic service is being met is lacking. In order to obtain information on the foregoing, the American Association of Orthodontists, through its committee on Public Health, has already offered its cooperation to the United States National Health Survey and the Survey on Dentistry of the American Dental Association and is seeking the cooperation of the Division of Dental Resources of the United States Public Health Service. The A. A. O. is fully cognizant of its obligations.

Factors which influence the demand for orthodontic care were found by the group to include (1) desire to eliminate dentofacial disfigurement and (2) desire for improvement of oral health and functional efficiency. The main blocks to the demand for orthodontic care are (1) unavailability of the service, (2) inability to pay the cost, and (3) ignorance of the benefits of orthodontic treatment.

The specialty of orthodontics was urged to plan public relations programs directed to dentistry in general, as well as to the other health professions, and to offer its full cooperation to public health authorities. The American Association of Orthodontists, through its Committee on Public Health and through its component societies, has been cooperating with public health bodies on the federal, state, and local levels for some years. The A. A. O. gave full cooperation to the American Public Health Association in the preparation of its syllabus on *Services for Children With Dentofacial Handicaps,* which is used as a standard manual by public health workers. As far as public relations is concerned, however, the A. A. O. would do well to make this its next order of business.

Few orthodontists, to our knowledge, ever give thought to the relationship of orthodontics to the other branches of dentistry. Only to a lesser extent is consideration given to the importance of orthodontics in the cleft-palate team, in the practice of pediatrics, and in the general hospital. This was the assignment of Group VI.

Pedodontist—orthodontist relationship as considered by Group VI calls for consultation with the orthodontist when a child shows evidence of malocclusion, since the responsibility for treatment may eventually be that of the orthodontist. The problem of how much orthodontics the pedodontist should do on his own requires the continuing collaborative consideration of the pedodontic and orthodontic specialties. The welfare of the patient must always be paramount.

How much do physicians and pediatricians know about orthodontics? The answer is: "Not much." Here the responsibility lies with the orthodontists. Our own experience has been that the orthodontist knows more than the medical men about systemic involvement in relation to malocclusion. Furthermore, the medical men are frequently resentful of the orthodontist who suggests systemic involvement in a patient, especially if the physician had not first mentioned the fact to the parents. Interprofessional meetings would do much to help in this respect.

Orthodontists on cleft-palate teams are important to practically all the disciplines involved. Diagnosis, treatment planning, supervision of dentofacial development and prognosis, and the timing and indications for surgical

or prosthetic procedure involve the knowledge of dentofacial growth and development which falls well within the ken of the orthodontist. On the basis of personal experience, we know of no reason why the orthodontist should not head up a cleft-palate group in a hospital or elsewhere.

"We feel," concludes Group VII, "that the factor of practice administration is of primary importance in establishing our public and professional relations."

Group VII dealt with choice of a location, office management, fees, appointments, dentist relations, tranfer of cases, and office associations and partnerships. Orthodontists just entering practice and those long established will find the deliberations of Group VII replete with practical information.

It is understandable that a review cannot cover every phase of a workshop which lasted a full week and the transactions of which, largely a digest, occupy almost 300 pages. There are many phases of the Michigan Workshop which have not been discussed here. Orthodontists who wish to improve their knowledge of their chosen specialty stand to profit greatly by reading and studying the Transactions when they are made available. Those responsible for the Workshop, including the co-chairmen, Drs. Robert E. Moyers and Philip Jay, deserve the thanks of all orthodontists and sincere congratulations for a job well done.

J. A. S.

Reports

REPORT OF REFERENCE COMMITTEE ON PRESIDENT'S ADDRESS, SOUTHWESTERN SOCIETY OF ORTHODONTISTS

YOUR Reference Committee is pleased to report on President Smith's address.

First, let us say with reference to President Smith's warm welcome to Little Rock that we know we speak the sentiments of all that Little Rock's hospitality is unsurpassed. We are having a fine time.

Further, the Committee would like to commend President Smith for the sincere and able thought which he has given to our problems; they indicate a breadth of understanding not often found.

In studying President Smith's address, we, too, want to hold to Francis Bacon's tenet that we all must hold to the "vantage point of truth"—always working desperately to find it, never being satisfied with ourselves, and continuing an objective search for basic truths.

As we see it, President Smith has made three distinct observations:

1. That too many of our graduate schools are teaching a one-system orthodontic therapy. We believe that this observation should be referred to the proper committee or committees for such action as they deem desirable or feasible. We, too, want to commend our director, Nathan Gaston, for his work in this direction.
2. That our Admissions Committee's work on education be highly complimented and that the Society give them their support in working out the preceptor-postgraduate and graduate qualifications for membership.
3. We agree with President Smith that the Orientation Committee should be reorganized to include as its chairman a member from the Board of Directors, namely, the third immediate past-president, and that a standing committee of two other members be created to serve with him.

Again, we wish to commend President Smith for his fine tenure in office and for the fine thought-provoking address.

We feel sure that, when this meeting adjourns, we will all say that this has been one of our finest meetings.

Respectfully submitted,

Claude Phillips
R. E. Olson
Harry H. Sorrels, Chairman

Department of Orthodontic Abstracts and Reviews

Edited by
DR. J. A. SALZMANN, NEW YORK CITY

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City

Abstracts Presented Before the Research Section of the American Association of Orthodontists, New York, May, 1958

A Comparative Cephalometric Analysis of Nonoperated Cleft-Palate Adults and Normal Adults: By Jaime de Jesus, D.D.S., Eastman Dental Dispensary, Rochester, New York.

Skeletal aberrations in persons with surgically repaired cleft palate were studied by comparing normal and postoperative cleft-palate subjects. The primary area of dysplasia has consistently been recognized as the maxilla. If it is assumed that the smaller maxillary dimensions in postoperative cleft-palate adults result from growth disturbances incurred through surgical procedures, then it seems necessary to establish whether or not smaller maxillary dimensions would occur if no surgical procedures were introduced. A comparative analysis of unoperated cleft-palate and normal adults offers an opportunity of determining whether there are significant skeletal differences between the two groups.

This preliminary study presents the results of a comparative cephalometric analysis of twenty unoperated cleft-palate subjects ranging in age from 15 to 49 years and ten normal subjects ranging in age from 25 to 45 years. Fifteen subjects in the cleft-palate group had posterior clefts, and five had complete unilateral clefts of the lip and palate. Three of the five in the unilateral group had surgically repaired lips, but none of the cleft-palate group had surgical repairs of the palate.

The present data provide an adequate representation of mature skeletal relationships in unoperated posterior cleft-palate cases, and the following conclusions may be drawn when the cleft-palate findings are compared with a sample of normal palates:

1. The proportional height of the maxilla with reference to total facial height was found to be similar in unoperated cleft-palate and normal adults.
2. Proportional measurements between anterior and posterior maxillary heights revealed no significant differences between the two groups.
3. This was also true when proportional measurements were established for the horizontal dimensions of the maxilla.
4. Mandibular length and position were also found to be similar in both groups.

5. Finally, the results of this comparative analysis permit the generalization that the mature skeletal relationships in unoperated posterior cleft cases were not found to differ significantly from those of mature normal persons.

A Cephalometric Appraisal of Cranial and Facial Relationships at Various Stages of Human Fetal Development: By Jorge C. Mestre, Jr., D.D.S., Eastman Dental Dispensary, Rochester, New York.

A limited study of prenatal human material was undertaken in an effort to study complex changes which take place in the development of the head. Lateral roentgenograms were traced and studied to evaluate changes in dimensions of the cranial base, the mandible, and the maxilla, as well as changes in the relationships between upper and lower facial structures.

For this experiment, twenty-four fetuses, ranging in age from 3 months (± 2 weeks) to 9 months (± 2 weeks) were used. They were divided into two main groups as follows: Group I, fifteen specimens from the third and fourth fetal months; Group II, nine specimens from the seventh, eighth, and ninth fetal months.

By comparing the mean measurements from Group I with those from Group II, the following observations were made: (1) The cranial base angle (basion-sella-nasion) became more obtuse; this seems to result from the combined movement of nasion and basion. (2) The anterior cranial base (sella-nasion) increased relatively more in size than the posterior cranial base (basion-sella). (3) There was evidence to indicate a greater forward positioning of the anterior nasal spine relative to nasion. (4) The posterior nasal spine exhibited a tendency to move proportionately in a downward and forward direction in relation to sella. (5) There was a tendency for the mandible to increase proportionately more than the maxilla in an anteroposterior direction. (6) The gonial angle showed a definite tendency to become more acute with increment in prenatal age.

In conclusion, we can surmise that some of the postnatal changes previously reported are in progress long before birth.

Forthcoming meetings of the American Association of Orthodontists:
1959—Statler Hotel, Detroit, Michigan, May 4 to 7.
1960—Shoreham Hotel, Washington, D. C., April 24 to 28.
1961—Denver, Colorado.
1962—Los Angeles, California.

News and Notes

1959 Milo Hellman Award, American Association of Orthodontists

The annual prize essay contest of the American Association of Orthodontists will be held to determine the recipient of the 1959 Milo Hellman Award as well as other honors. Any member of the American Association of Orthodontists is eligible and encouraged to compete, as well as undergraduate, postgraduate, and graduate students of recognized institutions in the field of dentistry. Those research fellows and teachers of established orthodontic departments are also eligible to submit papers.

To be acceptable to the Prize Essay Committee, the paper must be an original writing and must include new material and findings that are important to the advancement of orthodontics. The essay judged to be the winner is awarded a prize of $500.00, whereas those selected for second and third places carry honorable mention awards. The Prize Essay Committee reserves the right to omit the award if, in its opinion, none of the entries is worthy of the honor and prize. The first, second, and third papers automatically become the property of the Association and will be published in this JOURNAL, subject to the editor's approval. All other essays are returned to the authors.

All entries for the contest must be postmarked no later than Jan. 8, 1959. The entries will be carefully judged by members of the Research Committee, and the author of the winning essay will be expected to present his paper as a part of the program of the American Association of Orthodontists to be held in Detroit, Michigan, May 4 to 7, 1959.

Specifications for prize essay contest entries are as follows:

The essay must be typewritten in English on 8½ by 11 inch white paper, double spaced with at least 1 inch margins. Each sheet must be numbered and either bound or assembled in a "brief cover." The title of the essay must appear on the "brief cover." Three copies of each essay, including all illustrations, tables, and bibliography, must be submitted, but the name and address of the author must not appear on or in the essay. For identification of the essay, its title, its author's name, and a brief biographical sketch setting forth the author's professional training, present activity, and status (i.e., practitioner, teacher, student, research fellow) must be typed on a separate sheet of paper and enclosed in a plain envelope. The title of the essay only must appear on the envelope.

Further information regarding Research Committee activities may appear in News and Notes. In the meantime, address all inquiries to the undersigned.

J. WILLIAM ADAMS, Chairman
Research Committee
Indiana University School of Dentistry
1121 West Michigan St.
Indianapolis, Indiana

American Association of Orthodontists
Preliminary Program of Fifty-Fifth Annual Session
Statler-Hilton Hotel
Detroit, Michigan
May 3-7, 1959

It is the desire of the Program Committee that the 1959 program of the American Association of Orthodontists be constructive and thought provoking. The basic theme is as old as orthodontics itself, and we hope that its application will be as current as today's news. The theme will be "Diagnosis, Treatment Planning, Appliance Therapy," and it is our hope that each essay and Limited Attendance Clinic will play an important part in the total integrated program.

In order to cover the subject completely and yet concisely, the Committee has reduced the number of essayists to the minimum and will give each man ample time to explore his subject thoroughly. The program will begin with a philosophical analysis of the basic principles of an orthodontic diagnosis. This will be followed by an evaluation of all diagnostic aids to the end that each aid may be assigned its rightful position in the development of an orthodontic diagnosis.

After the groundwork for a proper diagnosis has been laid, then two essayists with divergent concepts of appliance therapy will be asked to give papers on "The Development of a Treatment Plan in the Light of One's Concept of Treatment Objectives." The next stage of the integrated program will be the Limited Attendance Clinics, patterned upon the basic theme of the convention. Each man will be asked to present cases in which he will thoroughly cover preliminary study, the use of diagnostic aids, the formulation of a diagnosis, the development of a treatment plan, and finally the appliance therapy.

Interspersed between the above portions of the basic program will be an American Board thesis, the Prize Essay, the Research Section program, and the Table Clinics. On the final day of the meeting the program will deal with prognosis, and on this day an attempt will be made to prognose orthodontics itself. The theme for the last day will be "Orthodontics in 1969."

The Program Committee sincerely hopes that the 1959 program will be enjoyable, instructive, and conducive to thought. In a subsequent issue of the JOURNAL, the final program will be published.

Scott T. Holmes, Chairman
Carl Anderson, Co-Chairman
Program Committee
American Association of Orthodontists

Program Outline

Monday

9. Welcome.
   Invocation.
   President's Address.
10. THE PHILOSOPHY OF ORTHODONTIC DIAGNOSIS. Wendell L. Wylie.
11:15. Selected American Board Thesis. Robert Moyers.
12. Golden Anniversary Luncheon.
1:45. Ketcham Award—Presentation and Response.
2:30. THE ROLE OF DIAGNOSTIC AIDS IN THE DEVELOPMENT OF A DIAGNOSIS. Alton Moore.
3:45. A.A.O. Prize Essay.

Tuesday

9. The Development of a Treatment Plan in the Light of One's Concept of Treatment Objectives. Joseph Jarabak.

10:15. The Development of a Treatment Plan in the Light of One's Concept of Treatment Objectives. William L. Wilson.

11:30. Business Meeting.

1:30. Research Section Program.

Wednesday

Morning. Table Clinics

Afternoon. Limited Attendance Clinics on the subject of Diagnosis—Treatment Planning—Appliance Therapy. (Each man will be asked to present cases in which he will thoroughly cover preliminary study, the use of diagnostic aids, the formulation of a diagnosis, the development of a treatment plan, and finally the appliance therapy. Attempts will be made to select men who will use various types of appliance therapy.)

Cranbrook, just north of Detroit in rolling Bloomfield Hills, is a world-famous combination of beautifully landscaped park and outstanding museums, schools and churches. The peristyle breezeway shown here, designed by Eliel Saarinen, links the library of the Cranbrook Academy of Art and the noted Cranbrook Museum of Art. The bronze sculpture of Europa and the Bull in the foreground is one of many pieces by the famed Carl Milles which dot the grounds.

Thursday

9. Orthodontics in 1969. Tom Graber.

10:15. Orthodontics in 1969. Harold Hillenbrand.

11:30. Business Meeting.

12. Adjournment.

Limited Attendance Clinics

The Limited Attendance Clinics have been planned to complement the main essay program. Whereas the main essays will deal with broad philosophical considerations and principles concerning diagnosis and treatment planning, the Limited Attendance Lectures will be more specific.

Participants in the Limited Attendance Clinics have been asked to discuss their own methods of diagnosis and treatment and to emphasize the reasoning and thinking which go into the use of them. Each man will present cases in which he will thoroughly cover preliminary study, the use of diagnostic aids, the formulation of a diagnosis, the development of a treatment plan, and finally the appliance therapy.

Eighteen orthodontists have been invited to present Limited Attendance Clinic lectures:

1. Dr. Eugene West, San Francisco, California.
2. Dr. H. L. Shehan, Jackson, Michigan.
3. Dr. William Oliver, Nashville, Tennessee.
4. Dr. Donald A. Closson, Kansas City, Missouri.
5. Dr. W. M. Thompson, Jr., Pittsburgh, Pennsylvania.
6. Dr. James Jay, New York, New York.
7. Dr. H. K. Terry, Miami, Florida.
8. Dr. Paul V. Ponitz, Battle Creek, Michigan.
9. Dr. Russell E. Huber, Dayton, Ohio.
10. Dr. Faustin N. Weber, Memphis, Tennessee.
11. Dr. Paul V. Reid, Philadelphia, Pennsylvania.
12. Dr. William S. Brandhorst, Ladue, Missouri.
13. Dr. R. A. Riedel, Seattle, Washington.
14. Dr. Howard J. Buchner, Oak Park, Illinois.
15. Dr. Merlin A. Spain, Omaha, Nebraska.
16. Dr. H. Halderson, Toronto, Canada.
17. Dr. L. Bodine Higley, Chapel Hill, North Carolina.
18. Dr. Cecil C. Steiner, Beverly Hills, California.

Edward Cheney, Clinic Chairman

American Association of Orthodontists
Registration of Nonmembers for Attendance at Annual Sessions

To ensure full participation of all active members of the American Association of Orthodontists, the following classification of nonmembers eligible to attend and schedule of attendance fees, which will be charged at the time of registration, has been set up for the coming annual session of the Association at the Statler-Hilton Hotel, Detroit, Michigan, May 3 to 7, 1959.

A. *No Attendance Fee.*

1. Full-time teachers in university dental schools.
2. Full-time graduate or postgraduate students in university orthodontic departments. It will be necessary to present a letter from the dean of the school certifying the status of the student.
3. Dentists from outside Canada or the United States of America who are members of recognized dental or orthodontic organizations.

B. *Attendance Fee—$10.00.*

1. Associate or junior members of constituent societies of the American Association of Orthodontists.
2. Recent graduates of university orthodontic departments who are in Government Service.

C. *Attendance Fee—$20.00.*

1. Recent graduates of university orthodontic departments who are not members of constituent societies of the American Association of Orthodontists.
2. Other guests.

Those persons who would be classified under the heading of C-1 or C-2 above are required to apply to the chairman of the Credentials Committee at least sixty days before the session for proper forms, which will require (a) written endorsement by two active members of the A.A.O. in the applicant's vicinity, (b) that the applicant be a member in good standing of the American Dental Association, and (c) that the applicant never has been rejected for membership in any of the constituent societies of the A.A.O.

Those persons who would be classified under the headings of A or B would be required only to submit credentials identifying themselves as being in one of these categories at the time of registration. Advanced reservations, which are by far most desirable, can be applied for by clearing one's credentials with the Credentials Committee by March 1, 1959.

Registration under categories C-1 and C-2 will, of necessity, be limited.

David L. Hall, Chairman
Credentials Committee
660 Cadieux Rd.
Grosse Pointe 30, Michigan

American Association of Orthodontists, 1959 Research Section Meeting

One session of our annual meeting in Detroit, Michigan, May 4 to 7, will be devoted to ten-minute reports in abstract form of research being done or completed which pertains to the science of orthodontics. Reports prepared for this program by authors not in attendance may be read by title only. It is hoped that all research that is suitable in nature will be reported on in this manner on the occasion of the Research Section's meeting.

Each participant is asked to prepare a 250-word abstract for publication in the AMERICAN JOURNAL OF ORTHODONTICS. Both the abstract for publication and the ten-minute oral report should be carefully prepared to present adequately the important elements of the investigation.

A special form for use in submitting the title and abstract will be circulated to all orthodontic departments and to any individual requesting one. In order to ensure proper timing and uniformity, a member of the Research Committee will have to edit the report as it is to be given. Reports, with accompanying forms, must be ready to submit Jan. 8, 1959.

J. WILLIAM ADAMS, Chairman
Research Committee
Indiana University School of Dentistry
1121 West Michigan St.
Indianapolis, Indiana

American Board of Orthodontics

The next meeting of the American Board of Orthodonties will be held at the Statler Hotel in Detroit, Michigan, April 28 through May 2, 1959. Orthodontists who desire to be certified by the Board may obtain application blanks from the Secretary, Dr. Wendell L. Wylie, University of California School of Dentistry, The Medical Center, San Francisco 22, California.

Applications for acceptance at the Detroit meeting, leading to stipulation of examination requirements for the following year, must be filed before March 1, 1959. To be eligible, an applicant must have been an *active* member of the American Association of Orthodontists for at least two years.

Northeastern Society of Orthodontists

The fall meeting of the Northeastern Society of Orthodontists was held at the new Queen Elizabeth Hotel in Montreal, Quebec, on Nov. 3 and 4, 1958. About 225 members and guests were registered for the meeting, which opened with a cocktail party on Sunday night.

The scientific sessions commenced at 9:15 A.M. Monday, when President Bedell called the meeting to order, and continued through Tuesday afternoon. The essayists and their presentations were as follows:

A New Approach to the Treatment of Mandibular Prognathism. Part II. Joseph K. Gold.
A Logical Approach to the Finger-Sucking Problem. Thomas M. Graber.
Trends in Dental Education. John B. MacDonald.
Extractions in the Problem Case. Paul V. Reid.
Appraisal of Cases Out of Retention. Thomas M. Graber.
Symposium: A New Approach to Esthetics in Orthodontics Through the Use of Epon-Resin Coated Appliances. Sidney L. Horowitz, Herbert J. Bartelstone, and Milford H. Corbin.
The Jaw, the Brain, and the Hand. C. D. Martin.
Case Reports. Paul V. Reid.

The Board of Censors submitted the following nominations for action at the annual meeting in March, 1959:

President, Wilbur J. Prezzano
President-Elect, Henry C. Beebe
Vice-President, Irving Grenadier
Secretary-Treasurer, David Mossberg
Editor and Sectional Editor, Joseph D. Eby
Assistant Editor, Brainerd F. Swain
Historian, Leuman M. Waugh
Board of Censors
(For one-year unexpired term), J. A. Salzmann
(For three-year terms), Clifford G. Glaser, Walter G. Bedell
Director to A.A.O. (two years), Norman L. Hillyer
Alternate Director to A.A.O. (two years), Richard A. Lowy

The annual spring meeting of the Northeastern Society of Orthodontists will be held at the Hotel Biltmore in New York City on Monday and Tuesday, March 9 and 10, 1959.

Rocky Mountain Society of Orthoodntists

The next meeting of the Rocky Mountain Society of Orthodontists will take place Sept. 13 to 16, 1959, at Hotel Jerome in Aspen, Colorado.

Southwestern Society of Orthodontists

The meeting of the Southwestern Society of Orthodontists opened on Sunday evening, Oct. 5, 1958, with a reception and buffet dinner at the spacious and beautiful Country Club of Little Rock. This is always a delightful occasion and serves to build a fine fellowship for the entire Society.

The official program of the annual meeting convened on Monday morning, October 6. After the opening preliminaries, President Thermon Smith gave his annual address. Chairman John W. Richmond of the Program Committee introduced our chief essayist, Robert M. Ricketts, who presented a series of five lectures on cephalometrics. Our own honored member, William R. Alstadt (President of the American Dental Association), was presented and received a standing ovation. He took time from the heavy duties of his office to attend our meeting and to report on the wide scope of the operations of the American Dental Association, its progressively increasing costs, and its service to the profession and to mankind. The presentation of the Martin E. Dewey Memorial Award is always an interesting occasion. Chairman Harry Sorrels made the presentation in his usual fine manner.

The attendance of 136 members and 82 ladies was a high representation of our membership, especially so since the location of the meeting was near the eastern border of our sectional area. The large percentage of attendance is a fine compliment of the respect and warm regard in which President Smith is held by his colleagues. He is an excellent executive and presided at all sessions in an efficient and orderly manner. He seemed to set the pattern for the future "on time" for all participants.

The smoothness with which the meeting operated could be likened to that of a mass-production line—every committeeman doing his job. That is one of the reasons for the great success of the meeting.

Presentation of an Arkansas Traveler Commission to President-Elect Marcus D. Murphey, Houston, Texas. Honorable C. G. Hall, Secretary of State of Arkansas, left, made the presentation. Thermon B. Smith of Little Rock, Arkansas, President of the Southwestern Society, center, presided over the thirty-eighth annual session.

Too much cannot be said in praise of the work of the committees. The scientific program was one of the best that we have ever had; the clinics and scientific exhibits afforded many helpful ideas and suggestions, and the local arrangements were superbly cared for.

The Publicity Committee, headed by Joe Dillard, set the pace for future activity. The fields of radio, television, and press were admirably covered.

The chief social event was the reception and dinner-dance honoring President and Mrs. Thermon B. Smith.

One of the very delightful occasions for the ladies was the visit to the home of President and Mrs. Smith.

W. E. Flesher.

Newly Elected Officers of the Southwestern Society of Orthodontists 1958-1959

President:	Marcus D. Murphey, Houston, Texas
President-Elect:	John W. Richmond, Kansas City, Kansas
Vice-President:	Bibb Ballard, Dallas, Texas
Secretary-Treasurer:	Harold Born, Bartlesville, Oklahoma
Directors, American Association of Orthodontists:	Nathan G. Gaston, Monroe, Louisiana J. Victor Benton, Wichita, Kansas
Members of Elected Committee	
Board of Censors:	Hugh A. Sims, Tulsa, Oklahoma
Advisory Committee:	Howard H. Dukes, Kansas City, Kansas
Public Relations:	K. V. Donaldson, Alexandria, Louisiana John H. Rogers, Wichita, Kansas
Nominating Committee:	John W. Richmond, Kansas City, Kansas Otto L. Voigt, Houston, Texas
Editor to Journal:	W. E. Flesher, Oklahoma City, Oklahoma
Qualifications Committee	
For two years:	Brooks Bell, Dallas, Texas
For three years:	Marion A. Flesher, Oklahoma City, Oklahoma
For three years:	W. J. Schoveling, Houston, Texas

The next annual meeting of the Southwestern Society of Orthodontists will be held in Houston, Texas, at the Shamrock Hotel, Oct. 4, 5, 6, and 7, 1959.

Program Résumé

CONTEMPORARY USE OF CLINICAL CEPHALOMETRICS. Robert M. Ricketts, D.D.S., M.S.

First Lecture:

"Equipment and Technics of Clinical Cephalometrics"

1. Exposure factors
   a. Methods of positioning for various exposures
   b. Development of film
2. Handling of records

Second Lecture:

"Gross Interpretation of Frontal and Lateral Films" (Subjective)

1. Physiologic and pathologic interpretation of x-rays
2. Gross morphologic considerations

Third Lecture:

"Cephalometric Analysis" (Objective)

1. Skeletal analysis
2. Dental analysis
3. Esthetic analysis

Fourth Lecture:

"Cephalometric Synthesis" (Subjective and Objective)

1. Estimation of facial growth
2. Estimation of changes induced by treatment
3. Changes in soft tissue (growth of nose, thickness of lips, etc.)

Fifth Lecture:

"Means of Evaluation of Growth, and Changes by Treatment"
1. Use of skeletal landmarks for study of growth
   a. Changes in the maxilla
   b. Changes in the mandible

Before cephalometric synthesis could be accomplished it would be necessary to know the normal growth process and possibilities of changes by various treatment procedures. To the contemporary orthodontist familiar with these technics, cephalometrics becomes indispensable to his clinical practice.

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SURVEY OF ORTHODONTIC ECONOMICS. Marion A. Flesher, D.D.S.

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Panel Discussion: USE OF AUXILIARY PERSONNEL IN THE ORTHODONTIC OFFICE. Harold S. Born, D.D.S., Hugh A. Sims, D.D.S., and John H. Rogers, D.D.S.

Scientific Program

Monday, October 6

Meeting Called to Order by Thermon B. Smith, D.D.S., President, Southwestern Society of Orthodontists.
Invocation: Rev. J. Kenneth Shamblin, Pastor, Pulaski Heights Methodist Church.
Greetings: Hon. C. G. Hall, Secretary of State of Arkansas.
Response: Marcus D. Murphey, D.D.S., President-Elect, Southwestern Society of Orthodontists.
President's Address: Thermon B. Smith, D.D.S.
Essayist, Robert M. Ricketts, D.D.S., M.S., Pacific Palisades, California.
Presiding: John W. Richmond, D.D.S., Chairman, Program Committee.
Presentation of Martin Dewey Memorial Award to Dr. William E. Flesher.
Harry H. Sorrels, D.D.S., Chairman.
Essayist, Robert M. Ricketts, D.D.S., M.S.
Presiding: George E. Mindeman, D.D.S.
Report of the Economics Committee, Southwestern Society of Orthodontists. Marion A. Flesher, D.D.S., Oklahoma City, Oklahoma, Chairman.
"A Survey of Orthodontic Economics"

Tuesday, October 7

Welcome Breakfast, Colonial Room, Marion Hotel. New members.
Essayist, Robert M. Ricketts, D.D.S., M.S.
Presiding, Claude Phillips, D.D.S.
Panel Discussion: "USE OF AUXILIARY PERSONNEL IN THE ORTHODONTIC OFFICE"
Presiding, Howard H. Dukes, D.D.S.
A. At the Chair.
   Harold S. Born, D.D.S., Bartlesville, Oklahoma
B. In the Laboratory.
   Hugh A. Sims, D.D.S., Tulsa, Oklahoma.
C. In the Business Office.
   John H. Rogers, D.D.S., Wichita, Kansas.
Report. The American Dental Association.
William R. Alstadt, D.D.S., Little Rock, Arkansas, President, American Dental Association.
Presiding: John H. Rogers, D.D.S.
Essayist, Robert M. Ricketts, D.D.S., M.S.

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General Clinics, Coach Room, Marion Hotel.
Adjournment.

General Clinic

(George E. Mindeman, D.D.S., Chairman)

1. Max R. Moore, D.D.S., "A Direct Method of Obtaining the FMIA Angle."
2. Hugh A. Sims, D.D.S., and Fred W. Sims, D.D.S. "A Tooth Positioning Acrylic Retainer."
3. Robert H. Knarr, D.D.S. "Activated Retainer for Class II Cases."
4. W. Kenneth Orman, D.D.S. "Some One Arch Treatments."
5. A. F. Westfall, D.D.S. "Treatment Planning and Case Analysis as Taught at the University of Texas Orthodontic Department."
6. James D. Swift, Jr., D.D.S. "Correction of Class II Cases With Twin Wire Appliance Using Sliding Elastic Hooks and End Tube Coil Springs."
7. Victor D. Bowles, D.D.S. "Treated Cases Using Multi-phase Appliance and Philosophy."
8. G. J. Broussard, D.D.S. "Demonstration of New All Purpose Orthodontic Appliance."
9. Robert E. Gaylord, D.D.S. "Orthodontic Cases Five to Ten Years Out of Retention."
10. John H. McNutt, D.D.S. "Case Analysis and Treatment Planning."
11. Harry H. Sorrels, D.D.S., and Paul Plowman, D.D.S. "Roentgenographic Appraisal of Growth and Development, Carpal Index."
12. George H. Wern, D.D.S. "Letters—Take Thou Of."
13. Joe T. Reece, D.D.S. "Modified Retaining Appliances."
14. William M. Lathrop, D.D.S. "Cephalometrics."
15. Tom M. Matthews, D.D.S., and Robert B. Connor, M.D. "A Moving Grid for Cephalometrics."
16. George E. Mindeman, D.D.S. "Patient Record Forms."
17. William R. Alstadt, D.D.S., William L. Casey, D.D.S., and Roy Golden, D.D.S. "Orthodontic Aids."

Presentation of the Martin E. Dewey Memorial Award, 1958, by Harry S. Sorrels

MR. PRESIDENT, MEMBERS, AND GUESTS OF THE SOUTHWESTERN SOCIETY OF ORTHODONTISTS:

It is my privilege this morning to report to you in behalf of the Martin E. Dewey Memorial Award Committee, and, while not wishing to deviate in any way from the main purpose of announcing the 1958 award winner, I do want you to know that this Committee has been grieved by the death of one of its members, Guy Gillespie, whose cherished memory we all hold in esteem. He was one of our finest and most honored members.

The Martin E. Dewey Memorial Award was created by this Society in 1954 to commemorate the work and deeds of one of the world's outstanding orthodontic teachers, who for years gave unstintingly of his wealth of challenging knowledge.

It is therefore fitting that his memory be commemorated by an annual award to one of our members whose lifework symbolizes a comparable life of service to this Society and to orthodontics.

The recipients of this award to date are Paul Guy Spencer (1954), Edmond B. Arnold (1955), Homer B. Robison (1956), and Thomas Gunter Duckworth (1957).

The Southwestern Society of Orthodontists proudly presents the 1958 award to William Everett Flesher, whose life has been one of extreme devotion to orthodontics.

Dr. Flesher was a member of the 1916 class of the Dewey School of Orthodontics and has always remained a devoted student of those fine principles of Martin Dewey, namely, that an able orthodontist must first be a student of the basic sciences and that the appliance therapy which he chooses to use is but a means to an end, rather than an end in itself.

Our honoree was born in Reedsville, Ohio, on July 29, 1880, the son of Mr. and Mrs. Francis Marion Flesher. Dr. Flesher's early schooling took place in Iowa, where he was graduated from Allerton High School. Since he lost his father when he was 7 years of age,

he and his family had a tough tussle to keep the wolf from the door. In 1902 he moved, with his mother and younger brother, to Edmond, Oklahoma, where he attended the Oklahoma Central State College. In college, Bill, as he was affectionately known by his fellow students, was not only an outstanding student but a fast-fielding and hard-hitting first baseman on the college baseball team.

In 1904 he decided to become a dentist and matriculated in the Keokuk Iowa Dental School, now the School of Dentistry of the University of Iowa, where he graduated in 1907. Upon graduating, he returned to Oklahoma where he set up practice in Frederick.

He was an active and enterprising member of the dental profession in this new state and attended the first meeting of the Oklahoma State Dental Association which was formed in 1907 by the merger of the Oklahoma Territory Society and the Indian Territory Society.

Dr. William E. Flesher

Responsibilities and honors have marked Dr. Flesher's career since he left college.

It has been said that the world is but a stage upon which each person plays a part, but only a very few qualify to play leading roles. Bill Flesher has been one of the latter, since every year of his professional life of fifty-one years, forty of which have been spent in orthodontics, has been filled with action or the good of dentistry. Dr. Flesher was in on the writing of the first constitution of the Oklahoma State Dental Association. He was a charter member of the Southwestern Oklahoma District Dental Society in 1914. He was elected president of the Oklahoma State Dental Association in 1915, and he served with honor.

Almost immediately upon entering dentistry, he became intensely interested in orthodontics, partially at least because of his college experience at the Keokuk School, where Martin Dewey had left an indelible mark as a student and teacher. Because of this profound interest, Dr. Flesher enrolled in Dewey's school in Kansas City in 1916 and was an outstanding member of this class.

In order to give adequate expression to this new-found love, Dr. Flesher moved to Oklahoma City in 1918 to devote his full time and energies to orthodontics, and to this day, forty years later, not one of us is more active in working for the well-being of orthodontics. Dr. Flesher is currently our sectional editor on the AMERICAN JOURNAL OF ORTHODONTICS. Because of his ability and service to orthodontics, Bill Flesher received orthodontics' highest acclaim in being chosen the 1933 president of the American Association of Orthodontists. His meeting was brought to the Southwest, being held in Oklahoma City. This meeting marked the first time our national organization had ever held its national meeting in the Southwest.

A further appraisal of Dr. Flesher's activities in life and civic affairs gives us the following breakdown and, better than this report, profoundly says that this man has given us just cause to say, "no man has done more for Southwestern Orthodontics." Dr. Flesher's biography carries the following singular achievements:

Member, organization of the Oklahoma State Dental Association, 1908.
President of the Oklahoma State Dental Association, 1915-1916.
Secretary of the Oklahoma State Dental Association, 1916-1919.
Editor, Oklahoma State Dental Association *Bulletin*, 1916-1919.
Member, Alumni Association, Dewey School of Orthodontics, 1916-1933.
President, Southwestern Society of Orthodontics, 1923.
President, Alumni Association, Dewey School of Orthodontics, 1924-1925.
President, Oklahoma Central District Dental Society.
Chairman, Oklahoma State Dental Association's Legislative Committee, 1933-1937, when more advanced dental laws were enacted, including The Specialist's Law.
Member, American Society Dentistry for Children.
Member, Denver Orthodontic Seminar Study Group.
Member, American College of Dentists, 1938.
Life member, Southwestern Society of Orthodontists, granted in 1937.
Life member, American Dental Association, 1956.
Member, Psi Omega Dental Fraternity.
Diplomate, American Board of Orthodontics, 1931, and a collaborator in its founding in 1929.
Director, American Board of Orthodontics for seven years.
Sectional Editor, AMERICAN JOURNAL OF ORTHODONTICS for six years.
Member, the Shrine.
Member, Oklahoma City Men's Dinner Club.
Member, Kiawanis International for thirty-nine years.
Member, Oklahoma City Golf and Country Club.

Furthermore, he has published some thirty articles on dentistry and orthodontics.

He also is a fine golfer and an avid athletic fan, being a member of the Oklahoma Quarterback Club.

Besides the above documentary evidence of achievement, Bill Flesher has had time to be the devoted husband of Abbie Phillips Flesher, one of the finest ladies in the world, and to rear to full manhood two of our finest members—Marion A. Flesher and William N. Flesher.

To conclude, let me read this unidentified quotation: "He has done nobly, may others be inspired to do as much, for as yet, there is so much undone."

Dr. Flesher, we salute you. Permit me to present you with this significant scroll, the emblem of this award.

Acceptance of the Martin E. Dewey Memorial Award, 1958, by William E. Flesher

MR. PRESIDENT, DR. SORRELS, FELLOW MEMBERS OF THE SOUTHWESTERN SOCIETY OF ORTHODONTISTS, AND GUESTS:

You have indeed bestowed upon me a very high compliment and a signal honor in the presentation of the Martin E. Dewey Memorial Award. Coming, as it does, through the regard and good wishes of my fellow colleagues adds emphasis to its importance and effect. Words do not begin to express my deep feeling of appreciation and gratitude in accepting this Award for which I wish to say, "Thank you," most humbly and sincerely. I wish also to say that in accepting this Award, I am not unmindful that among our members there are others most worthy of this honor.

The occasion of the presentation of the Martin E. Dewey Memorial Award is growing in importance year by year and rightly so, for it offers an opportunity to pay tribute, honor, and respect to the man who did so much to bring about a great forward march during the era in which he served the cause of dentistry.

As you know, at the turn of the century when Dr. Dewey was a dental student only a very few men limited their practices to orthodontics. Through the influence at that time of a private school in orthodontics, there was a gradual increase in the number entering the new specialty. Soon thereafter, Dewey had earned his degrees in dentistry and medicine and was among those present at the birth of the new specialty of orthodontics, so to speak. His experience as a teacher began in 1902 when he was a member of the faculty of the Keokuk Dental College and also when he served as guest instructor in the Angle School while earning his degree in medicine. His continued teaching on the faculties of different dental schools and in his own Dewey School of Orthodontia won for him a place among the foremost dental educators. For three decades he served as a guest speaker before professional, allied, and lay organizations.

As the specialty grew in numbers, there was naturally an increasing interest in the study of the problems surrounding orthodontics, including the prevention of malocclusion, problems which are the very same as those in the study of preventive dentistry today. This was the beginning stimulus of the accelerated study by the dental profession in general of the dental and oral health of children, including prophylaxis, oral hygiene, dentistry for children, diet, and periodontics, and their effect on the general health of the individual. But little consideration was given these subjects prior to the birth of our specialty.

It was this recognition of the progress made in dentistry that inspired the famous editorial on orthodontia by the late, renowned educator of dentistry, Dr. C. N. Johnson, a portion of which I wish to quote:

> The science of orthodontia came into the dental profession as a distinct benefaction. Groping at first in the mists and shadows of experimental uncertainty, it has emerged into a clearer atmosphere of a brighter dawn, where its achievements are penetrating the clouds and shedding sunshine over the hearts and minds of men. Sponsored by a small band of noble and devoted enthusiasts in the beginning, it has swept across the horizon of our professional activities till it embraces today the best energy of very many earnest practitioners, with an ever-increasing interest on the part of the profession and the public at large.

This editorial appeared in the January, 1926, issue of the *Journal of the American Dental Association*. Since that time, as you know, great strides have been made in our specialty. In our early years of practice, yearning and seeking as we did for further knowledge, our relationship deepened into a close fellowship and resulted in the organization of the Southwestern Society of Orthodontists.

The history of the Southwestern Society supports the statement of Dr. Johnson and has continued as a progressive and important branch of dentistry and a benefactor of humankind. Our growth in the number of exclusive practitioners and the extent of services rendered humanity is phenomenal. We were the first to be organized as a sectional society, and our programs have been comprised of distinguished educators in orthodontics and allied subjects.

Dr. Dewey was a frequently featured speaker on our programs and was always generous with his great wealth of knowledge and experience in orthodontics. His lectures were masterpieces of completeness. Among other outstanding characteristics of Dr. Dewey which helped to make him the great man that he was was his desire to glean knowledge wherever he found it. He made a practice of associating himself with anyone who was a scientist and could aid him in his search for further knowledge in orthodontics. While we considered him a master, he remained a humble student. Oftentimes he would accept no gratuity other than the enjoyment of our friendship and hospitality.

We owe him a debt that can never be fully repaid. We honor and pay tribute to him and his teachings in holding high the basic principles of orthodontics.

It is fitting, therefore, that our Society should have the privilege each year of the presentation of the Martin E. Dewey Memorial Award, so that posterity shall have a record of our achievements.

May I indulge in a personal reference. It was my privilege to attend Keokuk Dental College the fall after Dewey received his degree in medicine. Naturally, as a student I heard much of Dewey's ability as a teacher, since for two years just preceding he was an instructor in the dental college. It was also my good fortune to know Dr. Lourie, the second orthodontist in Chicago, though a native of Keokuk and a graduate of our school. These two men, foremost specialists in a new profession, somewhat of a novelty at that time, stimulated my interest in the study of orthodontics, and it continued even through the eleven years of my experience in the general practice of dentistry.

To you, my dear friends, I wish to say that this is one of the very nicest things that have ever happened to me, and I am more grateful than I can possibly tell you.

Sincerely, I thank you.

U.S. Postage Stamp to Commemorate A.D.A. Centennial*

The Post Office Department will issue a "dental health" postage stamp next year commemorating the one hundredth anniversary of the founding of the American Dental Association, it was formally announced Nov. 1 by Postmaster General Arthur E. Summerfield in Washington, D. C. The stamp will be issued in New York City on Sept. 14, 1959, the opening day of the A.D.A.'s Centennial Session. The denomination, design, and colors of the commemorative stamp will be announced later.

"The dental profession welcomes this news of a special stamp which will help center public attention on the importance of dental health for all our citizens," Dr. William R. Alstadt, of Little Rock, A.D.A. president, said. "During 1959, dentists throughout the entire nation will be engaged in various programs and projects marking a 'century of health service' carried on by the members of the American Dental Association. We are very grateful to Postmaster General Summerfield and the Post Office Department for this honor accorded to our profession." The "dental health" stamp is one of nineteen commemorative and special U.S. postage stamps scheduled to be issued during 1959. It is anticipated that it will be used widely by the 91,000 members of the A.D.A. Over a year ago, the A.D.A. invited nine well-known stamp artists, including five from Europe, to submit a design for a 1959 commemorative stamp for consideration by the Post Office Department.

The design submitted by Willie W. Wind, of Chicago, was selected as the winner by a special jury composed of Dr. Alstadt; Richard Cabeen, of Chicago, stamp editor of the

*From the *A.D.A. News Letter*, Vol. 11, No. 20, Nov. 3, 1958.

Chicago Tribune; Bernard Davis, of Philadelphia, director, National Philatelic Museum; and Jean Van Noten, of Englewood, New Jersey, a distinguished designer. Mr. Wind was awarded a prize of $1,000.00. Second prize in the competition sponsored by the A.D.A. went to Antonio Petruccelli, of Mount Tabor, New Jersey, and third prize was awarded Jan Van Krimpen, of Haarlem, Netherlands. Others who submitted designs were Karl Bickel, of Wallenstadt-Berg, Switzerland; Albert Decaris, of Paris; Edward T. Grove, of Drexel Hill, Pennsylvania; Edmondo Pizzi, of Rome; H. T. Schimek, of Vienna; and William P. Welsh, of Lexington, Kentucky. All the designs submitted in the contest have been turned over to the Post Office Department. Arrangements for ordering first-day covers will be announced later.

Orthodontic Workshop*

During the week of June 15-21, 1958, a Workshop in Orthodontics was held under the sponsorship of the W. K. Kellogg Foundation Institute and the School of Dentistry of The University of Michigan, with the cooperation of the Education Committee of the American Association of Orthodontists. The workshop was attended by 185 leaders in dentistry and orthodontics from the United States, Canada, Mexico, Puerto Rico, and Sweden.

The areas discussed were: (1) Educating the Undergraduate in Orthodontics, (2) Educating the Specialist in Orthodontics, (3) The General Practitioner and Orthodontics, (4) Research in Orthodontics, (5) Meeting the Demand for Orthodontic Services, (6) The Relationship of Orthodontics to Other Health Services, and (7) Practice Administration.

Speakers at the workshop included Dr. William Alstadt, President of the American Dental Association; Dr. Paul H. Jeserich, Dean of the School of Dentistry and Director, W. K. Kellogg Foundation Institute, The University of Michigan; Dr. Lowrie J. Porter, New York, New York; Dr. P. G. Anderson, Department of Operative Dentistry, University of Toronto, Toronto, Canada; Dr. Edward A. Cheney, Lansing, Michigan; Dr. Touro M. Graber, The Dental School, Northwestern University; Dr. Stephen Hopkins, Sr., Washington, D. C.; Dr. Anders Lundstrom, Royal Dental School, Stockholm, Sweden; Dr. Samuel Pruzansky, College of Dentistry, University of Illinois; Dr. Robert M. Grainger, Ontario Department of Health, and Dr. Frank Popovich, Orthodontic Research Center, Ontario, Canada; and Dr. Robert E. Moyers, Department of Orthodontics, The University of Michigan, Coordinator of the Workshop. Dr. Philip Jay served as moderator.

Plans are in progress to have the transactions of the Workshop published during the latter part of this year or the early spring of next year.

Kansas State Orthodontic Society

The next meeting of the Kansas State Orthodontic Society will be held Sunday and Monday, Feb. 1 and 2, 1959, at the Baker Hotel in Hutchinson, Kansas. Dr. Wayne Rose, pedodontist of Wichita, will discuss "Orthodontic-Pedodontic Problems," and Dr. James M. Alley, Jr., Wichita oral surgeon, will discuss "Impacted Cuspids." There will also be clinics by members of the Society.

The Oklahoma-Kansas orthodontic meeting will take place June 7 and 8, 1959, at the Western Hills Lodge in Wagener, Oklahoma.

Howard H. Dukes, Secretary
754 Brotherhood Bldg.
Kansas City, Kansas

*From the *Alumni Bulletin* of the School of Dentistry of The University of Michigan.

European Orthodontic Society

The thirty-fifth Congress of the European Orthodontic Society will be held July 6 to 11, 1959, in Marseilles, France, in the building of the Faculty of Sciences. There will be free lectures, films, and clinic tables. Participants may express themselves in either French or English.

One day will be devoted to a symposium on soft palate (not cleft palate) and its treatment by surgical, orthodontic, orthophonic, and prosthetic means.

Dr. J. Autissier, 3 Blvd. Paul Doumer, Marseilles, France, is president of the European Orthodontic Society, and Mr. D. P. Walther, Royal Dental Hospital, London, W. C. 2, England, is secretary.

Thos. Cook and Son agencies throughout the world will be qualified to receive reservations and money. Three different hotel categories will be available.

Pan-American Dental Congress

Dr. E. C. Lunsford of Miami, Florida, was appointed Honorary Chairman of the orthodontic section of the Pan-American Dental Congress which was held in Mexico City, D. F., in November, 1958. Dr. Lunsford was also appointed President of Honor of Table Clinics of the National School of Medicine, University City, during the Pan-American Dental Congress.

Dr. Samuel Fastlicht acted as President of the Association Mexicana de Ortodoncia. Orthodontists in attendance were Drs. George M. Anderson, Gustav Korkhaus, E. C. Lunsford, Edward C. Martinek, Sidney E. Riesner, and Charles H. Tweed.

Columbia University

The School of Dental and Oral Surgery of the Faculty of Medicine, Columbia University, announces the presentation of the following courses for qualified orthodontists in the academic year 1958-1959.

1. Twin-Wire Appliance Therapy.
   Dec. 8 to 12, 1958. Joseph E. Johnson and associates.
2. Theory and Practice of Extraoral Forces.
   March 16 to 21, 1959. James Jay and associates.
3. Edgewise Appliance Therapy.
   Feb. 23 to 28, 1959. Clifford L. Whitman and associates.
4. Applied Roentgenographic Cephalometry.
   June 1 to 3, 1959. Dr. Henry I. Nahoum and associates.

For further information, address inquiries to Postgraduate Admissions, Columbia University, School of Dental and Oral Surgery, 630 West 168th St., New York 32, New York.

Notes of Interest

James O. Bailey, D.D.S., announces the association of Ralph W. Rushing, D.D.S., practice limited to orthodontics, 1621 Tenth St., Wichita Falls, Texas.

Andrew M. Cibere, D.D.S., announces the removal of his office to 318 Highland Ave., South Norwalk, Connecticut, practice limited to orthodontics.

Henry E. Janusz, D.D.S., M.S., announces the opening of his office at 3235 E. Mayfair Blvd., Fresno, California, practice limited to orthodontics.

Dr. Jerome L. Reisberg, 502 Pleasant Valley Way, West Orange, New Jersey, has limited his practice to orthodontics.

OFFICERS OF ORTHODONTIC SOCIETIES

The AMERICAN JOURNAL OF ORTHODONTICS is the official publication of the American Association of Orthodontists and its component societies. The Editorial Board of the JOURNAL is composed of a representative of each of the component societies.

American Association of Orthodontists

(Next meeting May 4-7, 1959, Detroit)

President, C. Edward Martinek - - - - - - - - - - - Fisher Bldg., Detroit, Mich.
President-Elect, George M. Anderson - - - - - - - 3700 N. Charles St., Baltimore, Md.
Vice-President, Ernest N. Bach - - - - - - - - - - Professional Bldg., Toledo, Ohio
Secretary, Earl E. Shepard - - - - - - - - - - - - 8230 Forsyth, St. Louis, Mo.

Central Section of the American Association of Orthodontists

(Next meeting Sept. 28 and 29, 1959, Chicago)

President, John R. Thompson - - - - - - - - - 55 E. Washington St., Chicago, Ill.
Vice-President, Henry E. Colby - - - - - 1850 Medical Arts Bldg., Minneapolis, Minn.
Secretary-Treasurer, William F. Ford - - - - - - - 575 Lincoln Ave., Winnetka, Ill.
Director, Elmer F. Bay - - - - - - - - - - 216 Medical Arts Bldg., Omaha, Neb.

Great Lakes Society of Orthodontists

President, Edwin G. Flint - - - - - - - - - 8047 Jenkins Arcade, Pittsburgh, Pa.
Treasurer, D. C. Miller - - - - - - - - - - 40 South Third St., Columbus, Ohio
Director, Robert E. Wade - - - - - - - - - - - 327 E. State St., Columbus, Ohio

Middle Atlantic Society of Orthodontists

(Next meeting Oct. 4-6, 1959, Washington)

President, Stephen C. Hopkins, Sr. - - - - - - - 1746 K St., N.W., Washington, D. C.
Vice-President, Paul V. Reid - - - - - - - 615 Medical Arts Bldg., Philadelphia, Pa.
Secretary-Treasurer, Charles S. Jonas - - - - - - - Mayfair Apts., Atlantic City, N. J.
Director, B. Edwin Erikson - - - - - 3726 Connecticut Ave., N.W., Washington, D. C.

Northeastern Society of Orthodontists

(Next meeting March 9 and 10, 1959, New York)

President, Walter R. Bedell - - - - - - - - - 49 Market St., Poughkeepsie, N. Y.
Vice-President, Henry C. Beebe - - - - - - - - 60 Charlesgate West, Boston, Mass.
Secretary-Treasurer, David Mossberg - - - - - - 36 Central Park S., New York, N. Y.
Director, Norman L. Hillyer - - - - - - - 230 Hilton Ave., Hempstead, L. I., N. Y.

Pacific Coast Society of Orthodontists

President, Richard Railsback - - - - - - - - - 1333 Grand Ave., Piedmont, Calif.
Vice-President, William D. Lee - - - - - - - - 8461 Van Ness Ave., Inglewood, Calif.
Secretary-Treasurer, Warren Kitchen - - - - - - 2037 Irving St., San Francisco, Calif.
Director, Richard Railsback - - - - - - - - - - 1333 Grand Ave., Piedmont, Calif.

Rocky Mountain Society of Orthodontists

(Next meeting Sept. 13-16, 1959, Aspen, Colo.)

President, Howard L. Wilson - - - - - - - - - 1107 Republic Bldg., Denver, Colo.
Vice-President, H. Carlyle Pollock, Jr. - - - - - - 915 S. Colorado Blvd., Denver, Colo.
Secretary-Treasurer, E. H. Mullinax - - 209 Lakewood Medical Center, Lakewood, Colo.
Director, Ernest T. Klein - - - - - - - - - - - - Republic Bldg., Denver, Colo.

Southern Society of Orthodontists

(Next meeting Oct. 11-14, 1959, Atlanta)

President, H. Harvey Payne - - - - - - - - - - 60 Fifth St., N.E., Atlanta, Ga.
Secretary-Treasurer, William H. Oliver - - - - - - - 1915 Broadway, Nashville, Tenn.
Director, Boyd W. Tarpley - - - - - - - 2118 Fourteenth Ave. S., Birmingham, Ala.

Southwestern Society of Orthodontists

(Next meeting Oct. 4-7, 1959, Houston)

President, Marcus Murphy – – – – – – – – – – 2017 West Gray, Houston, Texas
Secretary-Treasurer, Harold S. Born – – – – – – 908 S. Johnstone, Bartlesville, Okla.
Director, Nathan Gaston – – – – – – – – – – – 701 Walnut St., Monroe, La.

American Board of Orthodontics

President, William R. Humphrey – – – – – – – – 1232 Republic Bldg., Denver, Colo.
Vice-President, L. Bodine Higley – – – University of North Carolina, Chapel Hill, N. C.
Secretary, Wendell L. Wylie – – – – – – University of California School of Dentistry, The Medical Center, San Francisco, Calif.
Treasurer, Jacob A. Salzmann – – – – – – – – 654 Madison Ave., New York, N. Y.
Director, B. F. Dewel – – – – – – – – – – – – 708 Church St., Evanston, Ill.
Director, Frank P. Bowyer – – – – – – – – 608 Medical Arts Bldg., Knoxville, Tenn.
Director, Paul V. Reid – – – – – – – – 1501 Medical Arts Bldg., Philadelphia, Pa.

A List of the Orthodontic Societies of the World and Their Principal Officers*

Angle Society of Orthodontia

Secretary, George W. Hahn – – – – – – – – – 2300 Durant Ave., Berkeley, Calif.
Treasurer, Carl F. Bruggeman – – – – – – – 10845 Lindbrook Dr., Los Angeles, Calif.

Chicago Association of Orthodontists

President, B. L. Herzberg – – – – – – – – – – 7200 Exchange Ave., Chicago, Ill.
President-Elect, Russell K. Ephland – – – – – – – Pickwick Bldg., Park Ridge, Ill.
Secretary-Treasurer, J. P. Baldridge – – – – – – – – – 32 S. River, Aurora, Ill.

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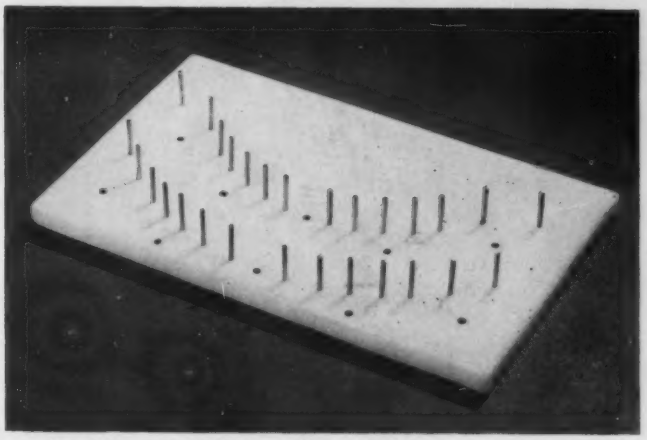

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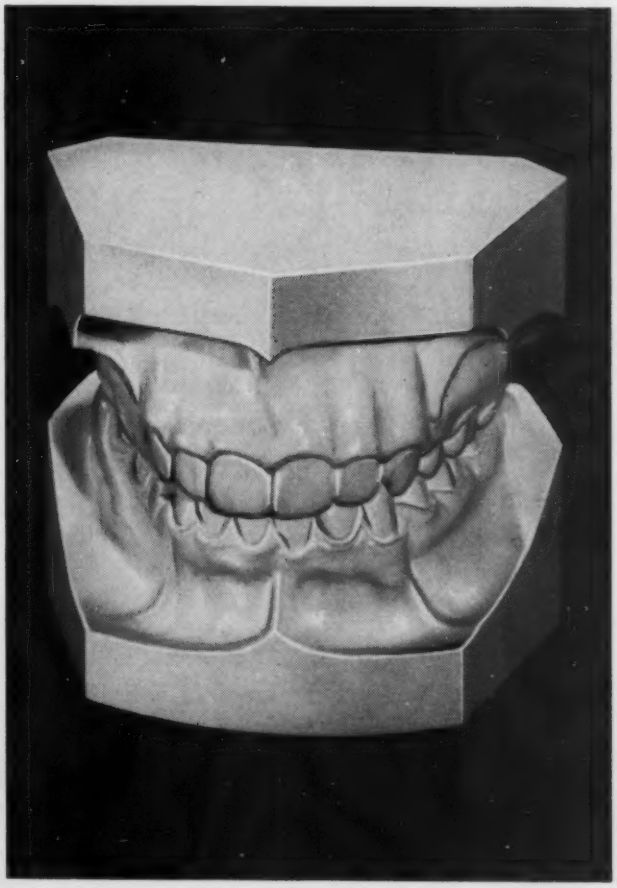

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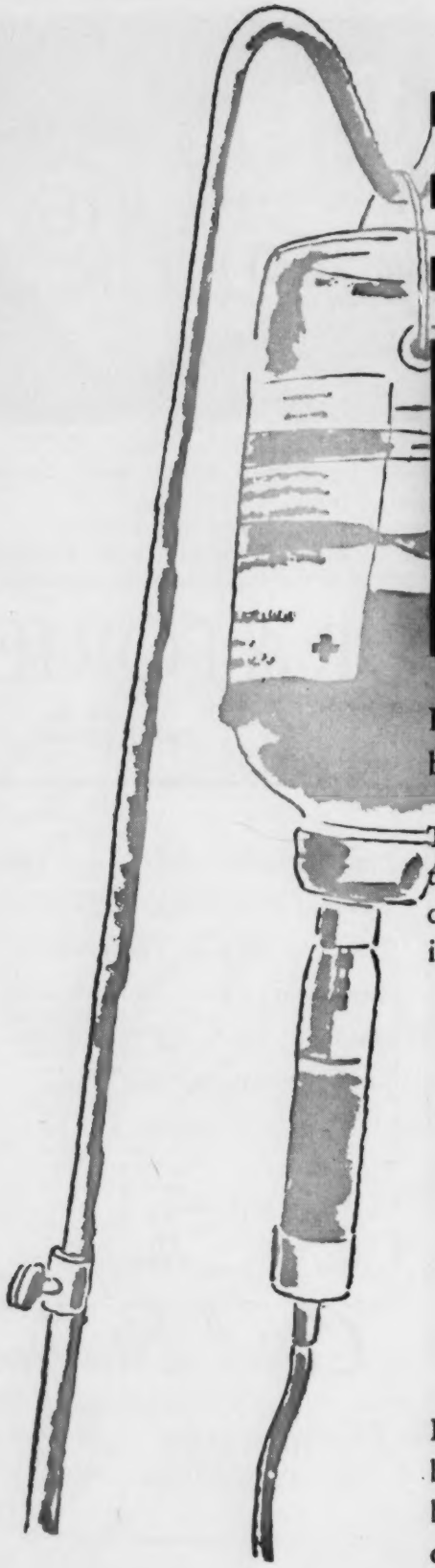

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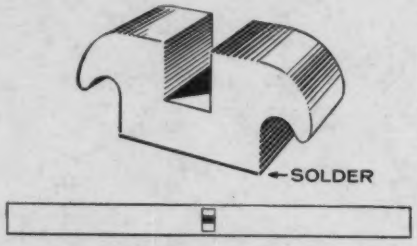
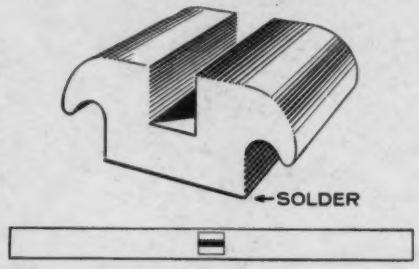
S.S.White Edgewise Brackets

Anterior .050″ wide M 452S



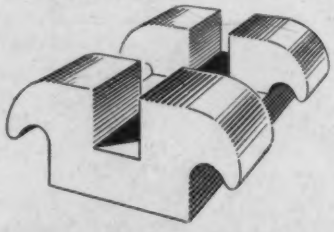
Posterior .100″ wide M 452AS



Pre-soldered Metalba* Edgewise Brackets are strong; remain clean in the mouth; can be soldered to; can be used on precious metal or Stainless Steel bands; and, used over and over again.

Divided Triple-width Edgewise Brackets

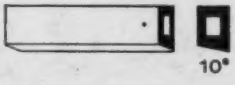
M 455



A convenient bracket for rotations as it provides two anchor points for ligatures. Supplied without solder to permit slight bending if required.

Anchor Tubes

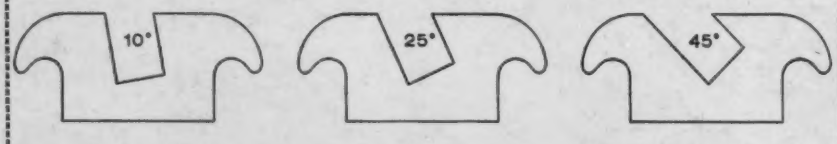
M 474



Metalba* Anchor Tubes for use in connection with Torque Slot Edgewise Brackets. They are ¼ inch long, rectangular tubes, with a bore of .022 x .028. The side of the tube which is to be soldered to the band has a 10 degree angle to permit it to fit into the Torque Slot Bracket assembly.

*METALBA—platinum color, precious metal.

Torque slot, Divided Triple-width Edgewise Brackets



The angle of the wire slot in the Bracket gives direction to the Torque force of arch wire.

M 516	Torque 10°	Width	.140 inches
M 517	Torque 10°	Width	.180 inches
M 518	Torque 25°	Width	.180 inches
M 519	Torque 45°	Width	.180 inches

METALBA
S.S.WHITE

THE S. S. WHITE DENTAL MANUFACTURING CO.

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